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GLEANINGS IN BEE CULTURE

A JOURNAL
DEVOTED
TO BEES
AND HONEY
AND HOME
INTERESTS.

ILLUSTRATED
SEMI-MONTHLY

Published by THE A. ROOT CO.
\$1.00 PER YEAR MEDINA, OHIO.

Vol. XXIII.

JULY 15, 1895.

No. 14.

STRAY STRAWS FROM DR. C. C. MILLER.

LINDEN gave my bees a taste, the trouble being the scarcity of trees.

I'M CULTIVATING a strain of bees that can live where there is no pasturage.

NO HIVE with more than eight frames has given a single pound of surplus for me this year.

"TOP SWARM" in England means a prime swarm. I don't think they ever say "bottom swarm."

GOLDEN CARNIOLANS. A correspondent requests the experience of myself or others with these bees. I've had no experience with them.

FOR NUMBERING HIVES, is there any thing better than movable tin tags? If not, what can I buy the numbers for? [Tagboard manilla, 50 cts. per 100.]

I SHOULD HAVE ADDED in a preceding straw, that my eight-frame hives did no better than the larger ones. Neither of them gave any surplus. So I can't come to any decision this year.

YEARS AND YEARS ago I got from Adam Grimm hives having spacing-arrangement with the principle used on p. 523. Have your spacers attached to the frame, not to the hive. [Yes, sir, every time.—ED.]

WHITE CLOVER sometimes blooms late, making a second spurt as a kind of afterthought. But I never knew this late bloom to be used by the bees; whereas, they seem to work busily on the latest bloom of sweet clover.

ALFALFA looks almost exactly like sweet clover, unless I've been fooled as to what alfalfa is. Why has no one ever told us this? But when alfalfa blooms, the blossom is purple, and the seed-pod looks a little like a snail.

I DON'T CARE for color or bands on the outside of bees, only so they have the good working qualities inside. But the outside marks help me to judge something of the inside qualities. [But do you think lots of yellow is an indication of longevity and energy?—ED.]

THE HIVE DISCUSSION will be interesting and useful for five years more, if it keeps bringing out good points. Now do you catch on, Mr. "Ed."? [Yes, but I want to be sure that a majority of our readers feel as you do.—ED.]

I DIDN'T KNOW you were so heavily loaded, Ernest, when I came at you on that section-holder business, p. 517. Just as quick as I can get myself assembled together I'll come at you again. [I still have lots of ammunition left.—ED.]

C. DAVENPORT gives some pretty good arguments, p. 513; but after all, I've a kind of notion that bees will put as much honey in a nail-keg as in the best hive, if left without help in each case. [But I was assuming that each was in an equally normal condition.—ED.]

CEMENT-COATED NAILS are among the new things, and I didn't think I'd like them better than rusted nails; but I've been using them, and like them very much. The advantage of being able to use lighter nails with the same holding power is not a small one.

W. W. WOODLEY complains in *British Bee Journal* of foundation in center sections left untouched when others are sealed. He thinks it may be that wax sheets were too thick, and pressed when too cold, making the foundation too hard for bees to work—a hint for foundation-makers.

THAT PHRASE, "catch on," is slang for which there is no excuse; and after I get through using it in this straw it never ought to be seen again in GLEANINGS. "Understand" expresses the idea just as clearly and forcibly. [Beg pardon, it doesn't; but then, perhaps I can get along with the less expressive term.—ED.]

"WHOO-DE-DOODEN-DOO!" That's what I said when I read a certain editorial item in GLEANINGS. Then I added, "So they've found out at Medina that there's value in sweet clover." If sweet clover, alfalfa, and a few more honey-plants, get a high seat as forage-plants, the future of bee-keeping may turn out better than the good old times before the wild flowers were all destroyed. [You shouldn't say "Whoop-de-dooden-do," because "hip, hip,

hurrah!" "expresses the idea just as clearly and forcibly." Do you c-c-catch on?—ED.]

THE PLAN of sending out with all supplies the right kind and quantity of nails to put the supplies together is one of the real comforts of a bee-keeper's life. Heretofore it was always a trouble to know what was the best nail for a particular purpose; and then when I did think I knew, likely as not I couldn't find at the store the kind I wanted.

YOU ASK, Mr. Editor, p. 512, "How would it do to have smaller membership fees and a larger membership?" Just the thing. Have the cost so small and the gain so large that every bee-keeper will want to be a member, even if he never attends a meeting. [This is an important question. I'd like to get expressions from others.—ED.]

MORE SUPERSEDURES are observed with clipped queens than with whole wings, perhaps two to one; for the man who has his queens clipped observes every case of supersedure, and the others are not noticed one time in five. But the queens with whole wings are superseded all the same. [We never clip, but our queens get "superseded all the same."—ED.]

NOTWITHSTANDING the dearth, June 8 I found at the Wilson apiary two colonies with queen-cells. I thought I'd settle their hash, and took away all brood and honey but two frames. Would you believe it? July 2 I found the insane things had both swarmed. At any rate, both old queens were gone, and a young queen had just emerged. [You shouldn't say "settle their hash," because it is slang. Eh?—ED.]

DR. RAMBLER thinks I wouldn't overeat if I deserted my wife and lived on crackers and cheese. I'm sure I shouldn't for long. A cracker, with its faint aroma of old grease, is one of the things I abominate, and

"Cheese is a mighty elf,
Digesting all things but itself."

If you'll excuse me, Rambler, I'll stick to the wife and the delicious bread she makes. [So shall I.—ED.]

ANENT that item on p. 526, isn't it true that bees always *think* they have a queen when they swarm? I had a queenless colony swarm, but the queen was removed not more than two or three hours previous, and I think they hadn't missed her. How long had your bees been queenless? [Some time; and that morning, previously all brood was taken away. We were preparing them for cell-building, and we wanted to get them fairly "howling" for brood and cells.—ED.]

How THICK is worker comb? On p. 525 Heddon calls it $\frac{1}{8}$; Cowan says "about $\frac{1}{8}$;" Dadant's Langstroth "about 1 inch," and Prof. Cook wisely says it varies. I think new comb will be found $\frac{1}{8}$ thick, (is it ever less?) increas-

ing in thickness with years of brood-rearing till it reaches one inch or more. The increased thickness is all in the septum, the depth of the cells being always the same. [Seven-eighths of an inch is a fair average for brooding-combs not over five years. I have measured scores of brood-combs from different hives, and have found them to register almost exactly seven-eighths.—ED.]



Our Hive Symposium.

SIZE AND SHAPE OF BROOD-CHAMBERS.

ARGUMENTS IN FAVOR OF DEEP HIVES FOR BROOD-REARING; DIVISIBLE BROOD-CHAMBERS NOT A SUCCESS.

By J. F. McIntyre.

Finding the ten-frame L. brood-chambers too small for this locality, Mr. R. A. Holley and myself have been experimenting this season with the object of deepening our brood-chambers without altering the other dimensions, so we could use all the combs and hives which we have on hand for supers, in case we decided to make a change. Mr. Holley was one of Mr. Heddon's pupils, and was prejudiced in favor of a double or horizontally divisible brood-chamber, so we tried two experiments. We each made a number of hives with 10 frames 7 inches deep, and several with 10 frames 12 inches deep, both the same length as the L. frame. After running through the breeding-season we have compared notes and agree exactly. The verdict is, that Dadant is right and Heddon is wrong; and we are both very positive that we want no horizontally divisible brood-chambers in our apiaries. On the other hand, we are both so pleased with the frames a foot deep outside I fear that, if some one doesn't hold us, we shall change all of our brood-chambers to that depth.

One thing that pleased us, and was rather a surprise, was the fact that the bees stored little if any more honey above the brood in the deep frames than they did in the shallow or L. frames. This gave the deep frames nearly twice the brood capacity of the L. frame, although only a fourth deeper. The shallow frames were a disappointment in every way. We could not produce nearly as much brood and bees in them, by any kind of manipulation, as we could in the deep hives. The queen did not pass readily from one section to the other; and, while she was laying in one section, the bees would store honey in the other. Alternating did no good. They would not remove the honey from the lower section, and place it in

the super according to theory. I think the reason was because the sections were too large for that kind of brood-chamber. I would say, if each section of a horizontally divisible brood-chamber is anywhere near the capacity of the queen, one or the other will soon be neglected, and filled with honey instead of brood.

Mr. R. Wilkin tried using two eight-comb L. brood-chambers (which were about the same capacity as our two seven-inch sections) on an extensive scale this season, and reports the same experience as we had with the shallow hives. The queen did not fill both sections satisfactorily, and soon neglected one altogether. From a non-swarming extracted-honey standpoint, give us ten L. frames, twelve inches deep outside, for a brood-chamber.

Fillmore, Cal., June 1.

[Personally, I have never experimented with deep brood-chambers; but I have observed this: that we in our locality, only a few miles from H. R. Boardman, while following precisely the same methods of wintering indoors, do not have the same success that he does with his deep hive. While we lose indoors from 10 to 25 per cent, Mr. Boardman loses none. Perhaps the depth of brood-chamber may have something to do with it; but after all, take the reports as they generally run, there does not seem to be much difference in results, so far as wintering is concerned, between the Langstroth size of frame and a square one.

But friend McIntyre's argument is, if I understand him correctly, that more brood can be secured by using a deeper frame. Perhaps he is right.

His experience, and also that of Mr. Holley, agrees almost exactly with tests that we have made here at the Home of the Honey-bees; namely, that bees do not breed as well in divided brood-chambers as in one in which there is no division. Of course, we have tried only a hive or two at a time; but the results, extended over two or three years at different times, have always pointed the same way. Last year, when I visited Dr. Miller I found he had been experimenting with divisible brood-chambers—or, rather, a few shallow extracting-chambers that had been adapted for the purpose. If I remember correctly, he had difficulty in getting the queen to breed properly in two or even one at a time; and I think he then concluded that full brood-chambers were far better for breeding. The experience of Dr. Miller, of ourselves, of friends Wilkin and McIntyre, of Mr. Holley (a man who was formerly predisposed in favor of double brood-chambers), seems all one way. We should really like to hear from those who have tested this matter impartially—that is, from those who have no selfish interest at stake. GLEANINGS wants the truth, even if it should turn our supply department upside down.

Referring again to the cubical hive, here is another article quite in the same line with what has been already expressed by Mr. McIntyre, except that he would prefer a hive entirely cubical.

THE CUBICAL HIVE.

ADVANTAGES FOR WINTERING, AND SURPLUS HONEY; SELF-SPACING FEATURE, ETC.

By F. A. Snell.

I have read with deep interest the numerous articles which have been published in our bee-

journals for the past few months upon the form and size of bee-hives, or, more particularly, the brood-chamber. The articles have been ably written, and in that kind spirit so commendable. In the 28 years that I have read on the subject of bees through our journals, I must say the subject of hives, or forms of them, has not before been discussed with the force of argument which has characterized these of the last few months, by so large a number of solid, practical bee-keepers.

As I have been keeping bees nearly all my life, and in my present location 35 years, I have experimented a good deal on a small scale with hives of various forms and sizes. First, with straw hives; then with box hives of various forms; later on, with the Cox, Langstroth, American, New Idea, Eureka, and one having 12 brood-frames 18x22 inches, having no bottom-bar, combs seven inches in depth. I have also used the chaff hive. I have tried placing boxes for surplus in front and rear of brood-chamber, and at sides of brood; also on top in addition to side storing.

After testing the various ways and sizes of brood-frames I decided upon a hive holding ten American brood-frames, 11¼ inches square, inside measure, and ten to a hive, which strikes a medium between the deep and shallow brood-frames. All may not be familiar with this frame, so I will state that the top-bars are tight-fitting, with the exception of two openings 2½x1½ inches, which affords passageway to the surplus-receptacles. The frames are spaced at the bottoms by large-headed eight nails, which keep the frames rightly spaced at all times.

Each hive-body has a movable side, opening half-way down from top. This hive may be tiered up as desired, and used for comb or extracted honey, as the apiarist may elect. I will give here some of the reasons why I prefer this form and size in a bee-hive. I can winter my bees more successfully; they pass through the spring months better, and are in much better shape when the honey season opens in June.

With me the colonies in deep frames almost invariably wintered well where supplied with good wholesome food, and a large per cent came out with the brood-chamber crowded with bees, while those in frames of 8½ inches depth wintered poorly in the cellar or packed on summer stands. Every apiarist knows full well what success in wintering means. If we can only have strong colonies May 1, with brood-chamber well stocked with food, we are pretty sure to secure a crop of surplus if it comes, provided the form of hives is such that it can be placed to best advantage to the owner.

When the bees begin to whiten the combs along the top-bars in early clover bloom, as they will with a fair flow, the surplus room should be given. If the hive is of compact form, the bees will commence work in all parts

of the receptacle at nearly the same time, and, as a result, all sections will be completed ready for removal about the same time, or ready to raise up and insert an empty one between it and the brood-chamber, which I do, as I have practiced this for over 25 years, long before the sectional box was used. If the surplus honey is sealed at about the same time in all parts of the case, the case can be removed promptly when full, and present the neatest appearance possible. The surplus will be a little whiter in appearance where there is a little capped honey under the top-bar than where that space is taken by brood. With a small brood-nest it has always been my experience that but little comb honey can be secured, or that such will cast a swarm before work has been well begun in the boxes.

With a large shallow brood-nest, work was readily begun in the central part of the super, and gradually pushed to the extreme parts; but too much time elapsed ere the remote parts were completed—so much so that the central combs were badly soiled by travel of the bees from the dark combs so near at hand in the brood-nest. The same rule will hold when tiering. With the hive I use, no honey-board of any kind is needed for comb honey, as I have not yet had the first queen to enter the $4\frac{1}{4}$ sections. Four or five brood-frames can be moved sidewise at a time if desired, as is the case with closed-end frames, which is very convenient.

One point I omitted in the proper place is this: In the hive described above as my preference, I will say that, in a good honey-flow, I have often two or more supers well advanced before the colony casts a swarm. With two hives now in my yard, holding ten brood-frames $11\frac{1}{4} \times 8\frac{1}{2}$ inside measure, they have never had, when they survived the winter, one case near completion ere they sent out a swarm, invariably a small one, while the larger hives send out swarms that count, if any.

Economizing heat in a brood-chamber during winter and spring, and where the stores should be, I may write on in the future.

I have taken GLEANINGS from the first.

Milledgeville, Ill., June 17.

[We haven't heard from Doolittle on this hive discussion yet; and as this article is somewhat in his line of experience, we should like to hear from him. In the mean time we received another article from C. W. Dayton, also in the same line.—ED.]

THE BEST CAPACITY AND SHAPE FOR BROOD-CHAMBERS.

BROOD-CHAMBERS OF VARIOUS SHAPES AND SIZES IN MANY LOCALITIES; A GOOD

ARTICLE.

By C. W. Dayton.

In 1882, in my apiary were 120 brood-chambers of 3466 cubic inches capacity, and contain-

ing 16 Gallup frames, $11\frac{1}{4} \times 11\frac{1}{4}$ inches. The inside measure of this hive was one foot in depth and width, and 24 inches length. It was designed to run the whole number of combs for brood-rearing up to the honey-harvest, when an upper story was to be added for extracting. Or, where the colony was operated for comb honey, the least-occupied combs were removed, and the space filled with two-pound sections. Such sections, being six inches square, four of them exactly filled the end of the hive when resting on the bottom-board. After three years' use it was found that not more than half of the colonies would become populous enough to require an upper story, and a large share of the extracting was done from a single story. About this time the ends of the hives were sawed off to reduce the number of combs to twelve. After a couple of seasons' use more, the brood-chambers were decided to be still too large because there were from three to six combs in the ends which contained honey instead of brood. The honey was wanted in the upper story. The hives were sawed off again, reducing the number of combs to nine. Then the brood-chamber contained 2088 cubic inches. I used that size of brood-chamber several seasons following, with perfect satisfaction so far as size of brood-chamber was concerned. The lower story contained brood in a compact form, and the super story caught nearly all the honey whenever the honey-flow was of any consequence. Yet it was found that attention was needed to provide sufficient stores for winter. This was usually done by inserting full combs of honey reserved for that purpose in extracting-time. By thus providing winter stores it makes a little more labor at the time of preparing the colonies for winter, but this is far more than regained by not being encumbered by unnecessary stores and combs in the hives in the busy season.

About one queen in 40 will appear to need two stories for brood; but I believe that such brood, if compactly disposed, might be all put in the one story.

In 1889 I began to look favorably upon the production of comb honey in one-pound sections; and the measurements of the Gallup hives were found exceedingly unsuitable for the adoption of the standard section. I was compelled to adopt the Langstroth measurements. For three seasons I handled 40 colonies, followed by one season with 250 colonies on Langstroth frames in both eight and ten frame hives. As a ten-frame colony is examined it would seem that the same amount of brood could be contained in an eight-frame hive; yet where a colony has been brought up in an eight-frame hive it seems to possess less available strength. The eight-frame colony does not occupy the super in greater force than does the ten. But when a ten-frame colony is contracted down to eight there is an increase of

energy in the super. This is too apparent for mistake. I account for it in this wise. In a ten-frame hive there is seldom any brood in the two outside combs. This leaves eight. There is also about one comb of pollen. If the pollen is scattered it is all the same—seven combs of brood. Apply the same deduction to the eight-frame hive, and it leaves five combs for brood. Allowing $1\frac{1}{2}$ inches to the comb, and measuring the lateral diameter of the brood-sphere, it is $7\frac{1}{2}$ inches, with a frame length of 17 inches. Now, the ten-frame hive exceeds the eight-frame, not by the two segments of the sphere's edge, like the slabs which are sawn from the log, but it is equal to two complete and square planks from the heart of the log. Two such combs of brood should enhance the strength of the colony one-half instead of one-fourth, as might at first be supposed.

The disproportionate length of frame may not cut so prominent a figure in a Southern California climate as in some of the colder latitudes—Colorado, for instance. In Colorado the nights, even late in spring, are cold. Then the middle of the days are very sunny and warm. When the hives face the south, the sun beats against the end so that it draws the brood up against the south end-bars of the frames, so that even the corners are all filled compactly with brood. I have seen brood so far to the south in eight combs, that, if six inches of the north ends of the combs were cut out, not a cell of brood would be disturbed. In Wisconsin there are more clouds during the days, and the days and nights are nearer of the same temperature. When two colonies were placed side by side with an inch of pressed chaff between the hives, the brood in each colony occupied the side of the hive nearest its neighbor. In this case the side combs contained brood on both sides, and more in quantity than any other combs in the hives. This happened on a cold unfavorable spring. The remote sides of the hives were unprotected from the inclement weather. If the brood will be placed far away from the cold end of a Colorado hive, why would it not be placed as far as possible from all four sides of the Wisconsin hive?

When the two frames are taken out of the ten-frame hive it has the effect to form a brood-chamber which is longer or slimmer in effect, than the original ten-frame chamber because of the squeezing or narrowing up of the brood-sphere. In other words, and in consideration of climates, kinds of weather, and different seasons, there is less consequence in *how much* space is taken away from a hive than in *how it* is taken away. Working against the natural tendency involves expenditure of heat and energy.

Had there not remained a broodless space in the ends of the combs of the ten-frame hive, the eight-frame hive would have never suggested itself. Nearly every one who went down

to the eight-frames has wished himself back again. Instead of lessening the number of frames, why not try the same number of less length? I have kept bees from a bread-and-butter standpoint in Wisconsin, Iowa, Colorado, and California, and have found the hive from which I never expect to change. Climates and localities do not affect its utility. It is the crossway Langstroth of ten frames, and 2020 cubic inches. The eight-frame L. contains 2100, and my nine-frame Gallup hive 1980 cubic inches. The eight-frame L. is large enough, but it is out of shape. After using ten $13\frac{1}{2}$ -inch frames to the hive for three seasons I am sure that the colonies become just as populous as with the $17\frac{1}{2}$ frame. It is calculated that food shall be stored in the ends of the long frames. In the short frame there is not. If I wished a brood-chamber to contain stores besides the brood, there would need to be 12 frames.

For winter, or for an abundance of stores at any time, a half-depth story remains on the hive, and nearly the whole supply of honey is kept in it. They very readily enter and refill a receptacle from which they are accustomed to obtaining their daily rations. The brood-chamber is $14\frac{1}{4}$ inches square, and it is $14\frac{1}{4}$ inches from the bottom-board of the hive to the top of the super, forming almost a perfect cube.

With the super there is always a good supply of stores, always a receptacle to catch a small run of surplus, and the surplus-receptacles are brought very close to the brood. I use two half-depth supers for extracting, so when one is being emptied there will remain one upon the hive.

I have arrived at this 2000 cubic inches capacity of the brood-chamber from two different starting-points in the last 13 years, while Mr. B. Taylor has occupied 45 years, and is not quite there yet. His frame is $8\frac{3}{4}$ inches deep. Had it been $8\frac{1}{2}$ inches, a wide frame of the same dimensions might accommodate two rows of $4\frac{1}{4}$ sections. I should like to know of the advantages of that $\frac{1}{4}$ -inch.

I did not expect to keep bees when I came to California; but the ease with which they could be managed induced me to start with 43 colonies in the spring of 1893. Since that I have purchased none, but have disposed of (by sale and trade) 120 full colonies, and produced 12,000 pounds of honey, and am now extracting from 125 colonies.

Florence, Cal., June 25.

[And here is still another in the same channel:

ALWAYS GETS AT LEAST 200 LBS., EXTRACTED,
WITH A SMALL HIVE.

I want to say a word in favor of small hives. I never fail to get more than 200 lbs. of extracted honey from my small hive. I commence extracting between the first and fifteenth of May, and continue until the last of July. I ex-

tract once a week, and get two gallons from each hive. Some one may say, "Why don't you make a hive that you can extract four gallons from at a time, and take out your honey only once in two weeks?" I have tried that, and my bees would not fill one in a month; but they will fill one half the size in a week. Some may say that honey will not keep if taken out once a week. But I know better. It will in this climate. I never had a pound of honey spoil in my life, and I have extracted once a week during the honey-flow for years. I think much depends on a deep brood-nest.

I have three sizes of hives. The one that I get the most honey from is 12x12 inside; the brood-nest is 12 inches deep, with 8 racks. The extracting-super is 12x12, inside measure, with 7 racks. I had ten hives 12x18½ inside, 9 inches deep. I tried them two years, and they did very poorly. I cut them off to 14 inches long inside. Since that they have done much better. My experience teaches me that 9 inches is not deep enough for a brood nest. I have kept a strict account of the amount of honey I have produced for 4 years, so I know what I am talking about when it comes to large and small hives.

I have taken GLEANINGS for a number of years. I like it better all the time.

Could not some one get a new pair of pants for Rambler? I am tired of those old plaid trousers.

JOSEPH I. EARLE.

Bunkerville, Nev., June 24.

[With all this available material before him, friend Doolittle ought to be pretty well loaded.—Ed.]

A SUPERIORITY OF QUEENS MORE THAN OF HIVES.

Friend Ernest:—I have read Mr. Davenport's article, and I think he shows a superiority of queens more than hives. Please note in Rambler's article, the 24-frame hive of Mr. Morley, 900 lbs. of honey cut out in one season, and your editorial, the improvements in hives tend to *less labor*, not *more honey*, and then think of keeping two men to *feed*. April 13th I selected 4 hives—two 8 and two 10 frame—am keeping a record of my work, and amount of honey from each. I will let you hear from them at the close of the season.

Sarasota, Fla., June 1. S. C. CORWIN.

TEN-FRAME HIVE AHEAD.

We find the ten-frame hive is much better than the eight-frame hive that we have been using. We changed five colonies from eight to ten frames, and placed them with an equal number of eight-frame hives, giving the ten-frame hives two frames of foundation. Now for the result: Four of the five eight-frame colonies have swarmed, but not a swarm from the ten-frame as yet. Each one of the ten-frame hives has filled 28 sections. We have placed another half-section, filled with founda-

tion, under the one already filled. This was done a week ago. We find to-day, June 26, the foundation drawn out, and partly filled with honey. The eight-frame hive that did not swarm have filled 24 sections, and we have put on another half-story with foundation. As to the strength of the colonies in the spring, they were about equal, or in favor of the eight-frame. The ten-frame hive is far superior to the eight-frame in this one point—swarming. We will give you a full report later.

Morristown, Tenn., June 26. GLENN & Co.

RAMBLE NO. 136.

AT HYDESVILLE.

By Rambler.

In Hydenville we discovered one of the most renowned bear-hunters on the Pacific coast—Mr. Herbert Hansen, a Swede, and one of the early pioneers, a wool-producer and owner of thousands of sheep. He had killed 512 bears, 308 mountain lions, and a greater number of deer. In the early days it required eternal vigilance to protect the lives of the herds of sheep against the depredations of wild beasts; but in these more civilized days it requires hunters of experience and the help of trained dogs to hunt the bear. We three wanted to enjoy a bear-hunt; but circumstances worked against us, and we were prevented, and did not secure bear-skins for rugs as we desired to.

Our first Sunday in Hydenville, Bro. Pryal and I attended church, where we found a progressive Christian spirit. The pastor gave us a very good sermon upon Sabbath observance. He told his flock that, if people came to visit them, it was their duty to invite the visitors to attend the church services with them; and the young ladies were admonished in like manner to invite their Sunday-evening gentlemen callers to spend the evening with them in church. Now, Bro. Wilder was a "gallant young man" with the ladies, and proceeded that evening to make a call. It is evident the minister's words were not lost upon the good young ladies; for in the evening Mr. Pryal and I were quite surprised to see Mr. Wilder meekly led in by two young schoolma'ams and safely sandwiched between them in the front seat in the church.

In my last Ramble I mentioned the fact that an apple-tree here will produce five barrels of apples in five years after planting. I have no reason to doubt the Blocksburg doctor's statement, for there are other things here equally marvelous. For instance, plant a schoolhouse anywhere in Humboldt Co., and in five years it will mature a crop of 50 schoolma'ams. The schoolma'am mania is so strong here that, in the rancher's families, triplets are not rare, and twins abundant—mostly girls. There are, therefore, more schoolma'ams to the acre here

than in any other like area in the State; and, aside from being mere schoolma'ams, I must say they were very smart and prepossessing. Up to our arrival in Hydesville, Mr. Pryal had appeared like a well-regulated, decorous, sedate, dignified, polite, "keep on your side of the fence and I'll keep on mine" sort of bachelor. He had given the fair sex generally to understand that he was engaged—to the Oakland waterworks; but here, after having the satisfaction of catching a few little fishes from Eel River, a change came over his demeanor, and for several days in succession he attended the county fair. Was this because he was interested in cabbages, corn, cheese, or the biggest rooster or the littlest hen? No; it was in the symposium of schoolma'ams, and Eureka was

By a happy combination of events, and a little sunshine in this land of the mist, I survived the wreck, brought order out of chaos, and what was left of us dropped into Port Kenyon, at the mouth of Eel River. Here, after getting Bro. Wilder into the warehouse, I had time to survey the country, and found it to possess the following features:

Eel River, after meandering through many miles of mountain scenery, mingles its waters with several other mountain streams, and departs mildly, just below Port Kenyon, into the Pacific Ocean. The rich bottom lands of the Eel River Valley afford succulent pasturage for many dairies, supporting all the way from 25 to 300 cows each. Creameries are abundant, and the resultant butter finds a ready



CLIMAX ENG.
CLEVELAND, O.

CREAMERY AMONG THE REDWOODS.

his theme (Eureka is where *the* schoolma'am lived). I could not, however, waste much time upon Mr. Pryal. Partner Wilder, since that fateful Sunday evening, was also afflicted with symposima'ams; there was trouble and some ominous threatenings in the air; roosters crowed; dogs howled; wind blew; rain descended; the hotel across the way caught fire; a weird earthquake rattled us, and at last that terrible symposium of schoolma'ams (was it a dream?) some younger and some older lugged Pryal and Wilder and our outfit off on their shoulders, leaving the Rambler in sackcloth and ashes. Whether it be a dream or not, that was the last we saw of Bro. Pryal. He and Susan B. vanished in the mist toward Eureka. Our poor dog, too, vanished into a sausage-factory.

market in San Francisco. In all of Eel River Valley there was not that cry of hard times we had heard elsewhere; and we found Ferndale, in the center of the dairy industry, a thriving town. Here, for the first time in our California travels, we found broad acres of pasture land that produced white clover in abundance; and surely in the land "where milk flowed and white clover grewed," there the honey ought to flow also.

A little search found the bee and the bee-man. There were several small apiaries of three and four colonies in box hives, but I found Mr. Inman, the bee-keeper of the valley. He had about 60 colonies. His hives were of the box order, with about 12 inches cubical dimensions. The old Harbison 2-lb. section was used

on this hive; and Mr. Inman, in selling his honey in the home market, cut it from the sections and used them over as long as they would hold together, and the most of them were black with age. Mr. Inman was not conceited in relation to his method of management, and desired modern hives and methods, and especially the light 1-lb. section; but considering his style of hive, and the fact that he was well up to 70 years of age, he was doing remarkably well to get 100 lbs. of comb honey to the hive in 1893, and in 1894 the season was off in Humboldt Co., as well as in other portions of the State, and from 50 colonies he obtained only 2500 lbs.

This excellent field of white clover is limited, being an area of only about ten miles square. Outside of this the bees obtain only a small amount of honey, principally from tarweed. Next to owning a large apiary, Mr. Inman seemed ambitious to use up the small apiaries around him. The nearest was only about 200 rods away. Mr. I. said that, when that feller came there, their bees fit like fury; but owing to his bees being very strong, the other fellow was *fit* out of seven colonies.

"Say," said he; "I could fix that feller's bees. Jest make a big swarm in a sugar-hogshead, and they will clean up his whole outfit."

Asking for further information, he explained that, by suspending a small hive of bees inside, near the top of a hogshead, they would increase and increase until they filled the whole hogshead, and they would rob out any apiary within three miles of them; and he claimed he had successfully tried it away back in New Hampshire; "and," said he, "by George, I've a good mind to try it on these upstart fellers around here."

Mr. Inman paid \$350 for his lot, 180x110 ft., and not in a town at that. Land in this valley is held at from \$500 to \$1000 per acre, and rents equally high.

Port Kenyon is the shipping-point from Ferndale. The little steamer Weeott makes regular trips to San Francisco, with butter, cattle, pigs, and merchandise; and, owing to the dangerous symposiums of schoolma'ams over the mountains, I resolved to return to San Francisco by steamer. The ocean was very rough, and had not subsided from the effects of the storms and earthquake, and the steamer lay out over the bar for several days, and finally on Sunday morning came into port.

All day the stevedores worked at unloading, and then loading. While this work was in progress I attended the little United Brethren church in town, and listened profitably to preaching, by a lady evangelist. There were several schoolma'ams present, and a large number of pretty milkmaids; but Bro. Wilder was safe in the warehouse, and the day passed without exciting episodes.

In the morning the captain said he was afraid the sea was too rough for his boat to cross the

bar. We were three miles from the shore, but could distinctly hear the hoarse roar of the breakers. About ten o'clock, however, the word was given for us to get our ponies on board. Our wagon and all its contents was lifted aloft with the hoist and donkey-engine, and gently dropped on board. The ponies clambered over the side on a sort of horse step-ladder. Mr. Wilder, with his past arduous experience on the bosom of the deep in remembrance, faced the bellowing ocean with a courage that was truly commendable.

The captain on the bridge felt his way carefully over the bar; two men at the bow of the steamer heaved the lead, taking soundings. One on the larboard side would shout, "Twelve fathoms, sir;" then from the starboard side would come "Ten fathoms, sir;" then it was 12 fathoms, then 15, then 20, and we were over the bar; but what a plunge our steamer made at 10 fathoms! Our ponies, near the forecable, lost their feet, and went to the deck. They were up in an instant, and snorted as a breaker curled over the larboard rail and drenched them with salt water; but, once over the bar, the vessel moved steadily onward, only taking those long swells that are so soothing to the voyager.

As I have received so many benefits from Mr. Wilder's deer-hunting by claiming every time that *we* shot the deer, I will here give him the benefit of my expertness as a sailor, and say that *we* were not seasick during this two days' voyage. In San Francisco we transferred our outfit to the river boat, and continued our journey by water up the San Joaquin River to Stockton. Over 300 miles by water refreshed us, and here we were ready again to take to the common highways.

FEEDERS AND FEEDING.

SOME KIND WORDS FOR THE CORNEIL SMOKER.

By Emma Wilson.

About the last of May, as the bees had nothing to do we concluded we would do a little outdoor feeding at the home apiary, although we had thought the feeding finished for this spring. We filled the Miller feeders and piled them up six or eight high, leaving a good space open at the bottom so the bees could get at them. But, although the bees were swarming around them, they did not seem to find the feed, or at least they did not empty the feeders as fast as we expected. We then tried setting the feeders on the ground, one in a place, filling the compartment very loosely with hay, then putting in the sugar and water, leaving the covers off entirely. And, my! but didn't the bees just swarm about those feeders!

Into some of them we put very little sugar—about a pound to five quarts of water—and in others we put five times as much sugar to the

same amount of water. It didn't take the bees long to find out which were the sweetest feeders, and these were quickly emptied, while on those that were sweetened just a little they made very slow work until a little more sugar was sprinkled on, when it was fun to see them hustle. As soon as the feeder was empty we would pour in more cold water and then sprinkle the sugar on without paying any attention to the bees, although the feeders were full of them. We rather thought they would look out for themselves.

We thought we had struck a big thing in the way of feeders, for a dish of any kind could be used; but when we came to take the hay out of the feeders we found a good many dead bees in the bottoms of two or three of them. Just what the trouble was I don't know; but I rather suspect they were drowned when we filled the feeders. If we were doing it again I think we would fill the feeders at night after the bees had stopped flying.

White clover commenced to bloom pretty freely, and we began to put on supers the 29th of May. To be sure, the colonies did not show many signs of harvest; but we concluded from the looks of the clover that it wouldn't be many days before they would be needed; and as we had time then, we would put them on then and not be worried about it. But we would better have left them off; for, although the white clover is fairly abundant, there does not seem to be any nectar in it—at least, our bees are doing nothing at the present date, June 11.

We have fed a ton of granulated sugar since last September, and the prospect is that we shall have to commence feeding again. We have not had rain for weeks, and are suffering severely for want of it. A good rain might help, but I fear we need not expect anything from clover. I am in hopes we may get a little from basswood. Dr. Miller never counts much on basswood; but I believe there may be more of it than he thinks.

We received from Medina one of the new Cornell smokers. The first time we used it, about one of the first things I did was to burn my fingers; and while they were smarting I concluded I didn't like that smoker very well. I had used the Crane smoker with asbestos for so long that I had become rather reckless as to how I handled it. However, I have used the Cornell smoker a good many times since, and have not burned my fingers any more.

One very good feature of the new smoker is that it will burn for so long a time without going out. One morning lately we had a little work to do in the home apiary before starting for the Hastings apiary. I lit the smoker with a few shavings; and as the shavings were almost gone I rolled up a piece of an old hive-quilt, with a good deal of bee-glue on, and put it in the smoker. This must have been about 7 o'clock. We worked for about half an hour at

home, then started for the Hastings apiary, which is about five miles away. When we went to use the smoker after getting there, we found it burning all right. We worked there till about 3 o'clock in the afternoon without refilling or relighting the smoker; and when we were almost home Dr. Miller picked up the smoker and it was still burning all right. I meant to keep watch to see how long it did burn, but forgot all about it after we got home, so "I don't know." Now, I think it was partly the smoker and partly the fuel that kept it burning so long. It is lighter than the Crane, which is another point in its favor. The manner in which the fire-box is fastened on to the bellows makes it stronger and better than anything we have had before. I have not had a chance to try it with a very hot and long-continued fire such as is used in smoking bees out of sections, but I imagine the Crane, with the asbestos, will then be ahead.

Marengo, Ill.

[I am sorry to know that you have had another poor season, or probably will have, from present indications. I can almost imagine that I see the season with you just as I saw it a year ago.

Using hay or grass over the syrup is a good idea, and not altogether old, I apprehend. A great many times, common pans may be put into the upper story of the hive, filled with syrup, and all that is necessary will be to pick up a good handful of grass and strew it over the surface of the syrup. I assume that, if it would do the work outdoors, it certainly would in the hive, where there would be less scrambling and crowding, resulting in the possible drowning of the bees.

Now with regard to the Cornell smoker. We have been experimenting with this smoker, the Cornell, for over a year; and I might explain that, along last winter, I sent one to Dr. Miller, telling him to test it thoroughly; and in *Stray Straws* for July 1 you will see he indorses it most highly. So you will see the smoker is no experiment; and, indeed, the principle has been tested thoroughly in Canada, and has, I believe, made a good showing on this side.

While the Clark is a most excellent implement for the money, we have heretofore had nothing between it and our very best smoker, the Crane. We have therefore devised a modification of the Crane and the Cornell. The method of supplying the blast to the fire-cup is Cornell's. The construction of the nozzle, hinging, legs, and fastening to the bellows, are improvements of the Roots and others, adapted to the Crane smoker and are now incorporated in the new smoker. In appearance the new Cornell resembles greatly the justly popular Crane. But you will observe the double-tube blast arrangement under the fire-cup, and next to the pair of hind legs, instead of the Crane valve. The bellows is not quite so highly finished as that of the Crane; but in another respect, with the exception of the shield, which is plain, and the Cornell blast arrangement, the new smoker is much like the Crane. This smoker will be sold at a medium price, and will meet the want of a very large number who do not care to go into the very best, but still want a little better than the cheapest. Its blast is not quite equal to that of the Crane, especially when crammed with fuel.

Now about the name—"Cornell." We have always, and more especially since his death,

held the name of a prominent Canadian in grateful remembrance. His scholarly ways, his pleasant manners at conventions, his fairness in discussion, have won the respect and admiration of bee-keepers wherever he has been. That man is S. Cornell. Some time ago he showed the advantages of the double direct-blast arrangement when attached to smokers; and while I did not think, and do not now, that it has the strength of the Crane, it goes a long way toward being as strong, and its method of application is very much cheaper. The only thing about the new smoker—that is, Cornell's—is the blast arrangement; but we always like to name a new implement after some good man who has contributed no small part to the vital function of the implement itself. In like manner it has been a pleasure to us to name our swarm-hiver after A. E. Manum, who first devised the tripod arrangement. In a similar way it has given us exceeding pleasure to name one of our recent extractors after Mr. Cowan; and rightly, too, should it be named the Cowan, because it employs the principle that Mr. Cowan first made public. It was a pleasure also to designate what we call our very best smoker a Crane, after that most excellent bee-keeper, lecturer, and scholar, J. E. Crane, who indeed devised its most vital features. In a like manner, also, it is now a pleasure to christen the new smoker after Mr. Cornell. All the men I have mentioned, after whose names we have christened apiarian implements, are and have been bee-keepers of high standing; and it is indeed a pleasure, dear readers, to give deserving honor to whom such honor is surely due.

VARIATIONS IN BEES.

The following is an extract from "Insect Life," published by the U. S. government, and edited by C. V. Riley. By the way, every bee-keeper and fruit-grower should get this periodical, and read it. As it is furnished free by Uncle Sam, there is no excuse for any man remaining in ignorance as to the nature of our insect-enemies, and how to destroy them.



While the different species of the genus *Apis* differ in size, coloration, temperament, and habit, there are comparatively slight variations in structure—a necessary inference for every zoologist. But if we study the other species of the family *Apidae* we shall find every variation, and ob-

tain a very good idea of how the special organs in *Apis* may have been evolved and perfected from simpler organs in other genera. This may be illustrated by a few sketches of some of the more important structures, as, for instance, the polleniferous organs and the wax-producing apparatus. (See Fig. 25.) The figures very well illustrate the fact that the modification of structure and hairy vestiture, which facilitates the collection and transportation of pollen, while exhibited perhaps in the greatest perfection in the hive bee, is nevertheless an evolution from similar structures possessed by other species of social bees, such as the *Meliponæ* and *Bombi*, and still more remotely from such as are possessed by the solitary bees.

In the production of wax, the hive-bee exhibits a lavishness not found in any of the wild bees, not excepting the species of *Trigona* and *Melipona*, which approach it most nearly in social economy. As a result we find that the wax-secreting organs of *Apis* are much larger than in any other wax-producing bees. In *Bombus* they are greatly reduced and otherwise different in structure, resembling, however, very closely those obtaining in *Melipona* and *Trigona*. In the solitary bees, which produce no wax, these specialized structures are entirely wanting. These solitary bees, no matter in what situations or of what material they make their cells, generally store them with honey or pollen, and, after depositing an egg, cap the cell and leave the young larva to care for itself. The habits of the social bumble-bee (*Bombus*) are but a step in advance, as the larvæ are developed in a mass of pollen and honey, in which they form rather imperfect cells. When full grown each spins a silk cocoon which is thickened by a certain amount of wax, which is added by the adult bees. The females labor, and several co-operate in the same nest. In the bottle-bees (*Melipona*) a still further step is seen, as the cells, of a rather dark, unctuous wax, are formed into regular combs, and are somewhat imperfectly hexagonal. They are, however, in single horizontal tiers, separated and supported by

intervening pillars, more like the nests of the social wasps, and the cell is sealed after the egg is laid upon the stored food, just as in the case of solitary bees. The honey is stored in separate flask-like cells, and but one queen is allowed to provide eggs.

HOW TO GET RID OF FOUL BROOD.

THE FOUNDATION PLAN EXPENSIVE; A PLEA
FOR THE PHENOL TREATMENT; DO
QUEENS CARRY THE INFECTION?

By Wm. F. Clarke.

I consider this the most important practical question at present before bee-keepers, and I should like to say a few words in reference to some editorial remarks on the subject in last issue of *GLEANINGS*, page 527. I hardly think the suggestion that intelligent and progressive bee-keepers offer to furnish foundation, frames, and new hives to owners of foul-broody stocks, is at all likely to be carried into general effect. What a wealthy firm can do in this line is no rule for individuals who are keeping bees on a limited scale. It seems to me that what is necessary in order to secure a riddance of this fell disease is, first, to find some cheap and easy method of cure; secondly, to find an effectual preventive; and, thirdly, to thoroughly disseminate a knowledge of the means of prevention and cure among bee-keepers.

What is now generally known as the McEvoy cure is too costly for general adoption. The expense per colony is about as follows: Two sets of frames, one set of starters, and one set of full sheets of foundation, from \$1.25 to \$1.50. If the suggestion made in *GLEANINGS* is followed, the cost of a new hive must be added, say \$1, making \$2.50. The work can be satisfactorily done only during the honey-harvest, and consequently it involves a loss of all surplus that season. For this item add \$5, making a total of \$7.50 per colony.

When I started my present apiary, which was certificated by the Foul-brood Inspector as perfectly healthy, I had a bee-keeping neighbor whose apiary consisted of 80 colonies which were known and admitted by him to be foul-broody. The inspector chalked 14 of those hives to be burned, and ordered the remainder treated on the costly method above mentioned. By the time the work was done the apiary was reduced to 40 stocks. This reduction of stocks adds another and a large item to the cost.

GLEANINGS deserves commendation for the full information it has given its readers concerning various methods of drug cure and prevention. It is, I am persuaded, along this line that we are to work out the general salvation from foul brood.

I have been greatly astonished at the failures reported by bee-keepers who have tried the Cheshire recipe; but a long and painful experience has taught me the secret of this general failure. It has resulted from the refusal of the bees to take the medicated syrup. I have not met with one case in which a bee-keeper has reported failure after the bees had taken, stored, and fed upon phenolated syrup. Mr. Cheshire virtually predicted this failure. He said in Vol. II., page 562, of his great work:

"Ligurians refused the food, and succumbed to the disease." * * * "To place the food with added phenol, on the hive, will, however, do nothing in the greater number of cases. If honey be coming in, the bees will not touch it; but open the stocks, remove the brood-combs, and pour the medicated syrup into these cells immediately around and over the brood, and the bees *will use* a curative quantity of phenol." As I read these directions I gathered that the bees *would use* a curative quantity administered in the above manner, even when honey was coming in. But I could not succeed in making them do it. However, I subsequently discovered a couple of wrinkles which I am very anxious to make known, in order that bee-keepers may experiment in view of them. The first is to feed the phenolated syrup at a time when there is absolutely no honey coming in. Take advantage of the period of complete cessation of nectar-yielding, when the bees are ravenous for food, and are like a hungry man who will not be particular to get quail-on-toast, and other epicurian dishes.

The second wrinkle is to take care not to medicate the syrup too strongly with phenol. I overlooked in my first trials this pregnant sentence: "500 dispatched the bacillus quickly when honey was coming in, and 750 when it was not." I found that, even in a time of scarcity, the bees refused the 500 decoction, and I kept diluting the syrup until they took it freely. I do not wish to "holler until I am out of the wood," and I am not yet prepared to tell fully "what I know" of foul brood; but I do not want to delay until another season at least a partial detail of my experience. The present season is so unfavorable that considerable feeding will have to be done this fall; and I want to say to bee-keepers who know or suspect that they have foul brood, *do your feeding not later than August, and medicate your sugar syrup with phenol anywhere between the 500 and the 750*. It is my firm belief, which it will take a large amount of rebutting evidence to shake, that, if these rules are strictly followed, Cheshire's recipe will cure any case of foul brood that is curable. I believe, too, that the same prescription will be an effectual preventive. The cost of the phenol is a mere bagatelle, and need not be made account of at all.

There is a great deal more I could say on this subject; but "my time is not yet." Longfellow says in his Psalm of Life, "Learn to labor and to wait," which is what I am trying to do. There is only one thing more I feel it necessary to say now, and that is this: I am afraid your confidence in the safety of taking queens out of foul-broody hives, and introducing them into healthy ones, is misplaced. You say a very few cases of queens carrying foul brood from one colony to another have been reported; but there are so many other ways in which it could have been carried that you are inclined to

doubt them all. Surely you have never carefully read Cheshire, Vol. II., pages 547-549, where it is proved to a demonstration, by dissection and microscopic examination of queens, that the *bacilli* have been found both in the ovary and in the egg. In one case, when a half-developed egg was crushed flat, *nine bacilli* were quickly counted. I pray and beseech you not to take any more queens out of foul-broody colonies for the purpose of introducing them to healthy ones. If we are to get rid of this terrible scourge we must run no risks, but, in all cases, "make assurance doubly sure."

Guelph, Ont., July 3.

[If Mr. McEvoy recommends treating colonies during the height of the honey-flow, of course this would make an expense depending upon whether the season was good or not. But my experience has shown that foul brood is much more apt to break out before or after the honey-flow. It is when bees eat their stores clear down that they get to where the diseased germs are. So I think we may say that in most cases, at least, treatment will be administered when there is no honey-flow. But suppose we do treat at this time. As seasons have been uncertain of late, \$5.00 would be a very large estimate of the actual loss. I think, therefore, we should, in the great majority of cases, throw out the \$5.00. I only suggested furnishing a new hive; but the one diseased can be boiled just as well as not. If this is accomplished during odd hours, the estimate you give could not run much above \$1.50 or \$2.00. So the foundation plan is not so very expensive, after all. And we must assume that the treatment by medication must cost something in the way of the drug in the first place; medicating the syrup; feeding, and the cost of the syrup itself. Practically, then, there would be no very great difference.]

With regard to the phenol, I personally tried it diluted 500, 1000, 750, and, in fact, all sorts of dilutions; and in nearly every case it would apparently check the disease, but not in a single case do I remember that it *cured* it entirely, *in the long run*; and when we were fussing with phenol, foul brood in the mean while got pretty well scattered over our yard. The economy of the foundation plan rests in the fact that it is an absolute cure; and if every colony is treated at once, before the disease gets a start, the expense can not be very great. And still again, my own experience with phenol was corroborated by that of a number of correspondents from Australia at the time; later on by Prof. Cook and many others.

I feel quite sure that in your own case you will find the phenol is only a temporary relief, and not a cure. But I thoroughly appreciate the point you make—that, if we can avoid the expense of foundation, waste of brood, and general interruption to the colony, by any method of medication, we should hail it with delight; and notwithstanding all the reports that I remember to have read seem to be against the phenol, I am still open to conviction.

My advice to owners of large apiaries was meant to be a suggestion, because they can well afford foundation and frames for a couple of hives, free of charge, rather than run the least risk of the disease being transmitted to their own yard. In other words, we can well afford to take a stitch in time, even though that little stitch costs a little something, in order to save nine stitches later on.

With regard to the disease in the ovary of the queen: I would not deny that Cheshire found

spores in the ovaries of queens;* but certainly we never had a case that was transmitted that way when we were experimenting along that line; but of course I would not carry the impression that it is wise to make a practice of taking queens out of diseased colonies and putting them into healthy ones. I would always take the safer course. It is not wise to drive too near the brink, even though we feel *perfectly sure* that we can drive within an inch or two of that brink and not run off.—Ed.]

CALIFORNIA ECHOES.

By Rambler.

One person has found honey a dear article in Riverside, Cal. He stole sixty sections from an apiary, was caught in the act, and the justice put the price of honey right up to \$1.00 per section, \$60.00, or sixty days in jail. The thief is in jail.

When uncapping honey for extracting, fasten a whetstone to the place where you wipe your knife. In wiping over the stone, the knife is kept to a keen edge. I am indebted to Mr. Schaeffle, of Calaveras Co., for a part of this idea. [Good. Paste this in your hat (head).—Ed.]

If I have ever said any thing reflecting at all upon the nectar-giving qualities of white sage, I will now take it all back. This year my observation has been where mountains are covered with it, and the bees have gathered tons of the most beautiful honey ever deposited upon the tongues of mortals. White sage is fully equal, if not superior, to either black or purple sage.

I suppose our Eastern friends desire to be kept posted on the length, breadth, and thickness of our honey-yield. It continues discouraging to us. Wild buckwheat, upon which so many depend for the last yield of the season, seems to be withering. It has the appearance of insect-work in the stalk, sapping the life from it. Again I reiterate the remark that our yield will not approach that of 1893.

M. H. Mendleson, of Ventura, does nothing in the management of bees in a small way. He moves his bees to the bean-fields, and his wagon for moving them will carry 100 colonies. With this rig it takes but a short time to surprise the blossoms of a new field with a great force of busy workers. Bro. M. puts the yield of Southern California at half a crop, and advises bee-keepers to hold their honey for 5½ to 6 cts. per pound.

*I am one of those who, though recognizing Cheshire's great work, do not believe that he was infallible in all things. You remember how severely he criticised his cotemporaries for the mistakes they had made. Later developments have shown that he was quite as capable of such sins as they. The man who pulls notes out of his brother's eye is pretty apt to have some tolerably big ones in his own. Hence, while I do not deny his statement here, I can't quite swallow it when real practice seems to be at variance with what he saw or thought he saw in the microscope.—Ed.

When John H. Larrabee left his apiary in Vermont to serve the government as an heroic "apistical experimenter," his brother Walter stepped into his shoes as a worthy successor at the home apiary. After a year's service, John left the government position for a higher walk in life, and walked into matrimony. Walter, like all observing bee-keepers, noting the felicitous condition of his brother, has also recently walked into matrimony. Walter and his helpmeet, I believe, stick to the bees and the farm, while John runs a bicycle-factory in Lansing, Michigan. [Good for Walter! The force of habit is strong. Beware, Bro. Rambler.—ED.]

When Mr. Alpaugh returned to Canada, from his travels in the Golden State, he gave some of his experiences in the *Canadian Bee Journal*; and among other things he said he found a condition in a certain California honey-house that he would not divulge, for it would amuse some Californians, and it might make some mad. Well, I have waited for the secret to come out; and, behold, Bro. Gemmel the tale unfolds before the whole Oxford Bee-keepers' Association, to their evident amusement. Bro. Alpaugh found a skunk in a can of honey—that's all. Why, my Canadian friends, that is a common occurrence. That particular apiary was infested with foul brood, and the owner was making a disinfecting compound to be used in the early spring. "Mephitis mephitica" and honey I would recommend to Inspector McEvoy, or any Canadians afflicted with foul-broody apiaries. It is easily prepared, as Mr. Alpaugh witnessed.

A petition is out for governmental interposition in behalf of *Apis dorsata*. Prof. Benton says it cost not much less than \$1000 for his abortive effort to import the great bee. Of course, Prof. B. does not wish to abort again on his own capital; but it seems to me that, if *Apis dorsata* is worth any thing to bee-keepers, it is a mighty poor national industry that can not land the bee here on its own account. [Are we sure *Apis dorsata* would be of any practical value once introduced? I have the impression from what I have read of them that they are exceedingly hard to domesticate. If such is the case, would it not be better to ask for appropriation in much more needed directions? We need, for instance, an apicultural station under the national government, and Frank Benton would be a good man to conduct it.—ED.]

"There comes a tenderfoot. Now we shall have some fun," said a bee-keeper to his helper; but when the supposed tenderfoot emerged from the foliage of a gum-tree near the apiary, he was veiled ready for emergencies. "Not much tenderfoot there," said the bee-keeper, "and no fun." This leads me to remark: Why do we laugh with delight to see a fellow-mortal stung by our bees? and the more dignified the unlucky man is, the more intense the laughter. I think the reason is found in the fact that

dignity stands no show before the angry hum of the bee. A reverend gentleman is supposed to be very grave and dignified; but let the sharp persistent hum of half a dozen bees sound close to his ears, and dignity is instantly dethroned. He swings his arms with greater energy than when pounding the pulpit; ducks his head, and, with hat toppling off, plunges into the neighboring bushes, with coat-tails in the air. Perhaps he comes out with an eye swelled shut; but the only sympathy he gets is a laugh and a shout—"Got stung, hey?" A cool, collected bee-keeper, then, should be the most dignified man on earth.



SHAKING BEES FROM OFF THE COMBS.

Question.—I am bothered very much in getting bees off their combs when I wish, for any reason, to change combs with certain colonies, and in extracting. We are told to shake them off, but there must be a peculiar way to shake them; for, shake as hard as I can, I get very few off, and generally make them angry when I try it. Will you please tell us in GLEANINGS how you get bees off their combs when you wish to?

Answer.—In changing combs in the apiary I always shake the bees off, or the majority of them; and with hybrids and the blacks, every bee can be shaken off, providing the combs are built in the frames as they should be, so that they fill the frames full and are in a straight and even line with the frame, thus giving the bees no little holes or open space along between the bottom-bar to the frame and the comb, into which they can crowd in such shape that they can not be dislodged as long as they stay there. After having the combs built out as above, and desiring to take a comb away from the bees, I place the projecting ends of the frame on the ends of the two middle fingers of each hand; and then with a quick upward stroke throw the ends of the frame against the ball or thick part of the hand at the base of the thumb. As the frame strikes the hand, let the hands give a sudden downward motion, which makes the shock still greater. As the frame strikes the fingers it is again thrown back against the hand, and so on till all or nearly all of the bees are off. The principle is, that the bee is on its guard all the while to keep from falling off, thus holding on tenaciously so as not to be easily shaken off by any motion which tends to throw it down. By a sudden stopping of the upward and a quick downward motion, the bees are thrown off their guard and dislodged from the comb in an upward direction. I do not remember of ever having broken a comb by

shaking it as above described, although some claim that they can not shake bees off their combs without breaking the combs more or less. In this way I have no trouble in shaking off black bees and hybrids; and if we disturb the Italians, causing them to fill themselves with honey, they can be shaken from their combs about as easily as black bees. But even if we can not afford to wait until they are filled with honey, four-fifths of them can be shaken off. To get off the remainder, one of the different bee-brushes, now to be had of supply-dealers, will finish the job very quickly; or, instead of the bee-brush, you can use a turkey or goose quill to fully as good advantage by trimming off about one-half of the wide side, so that the feather part will not irritate the bees. Of course, this will appear a little awkward at first, but will soon be found easy enough. In working for extracted honey I used to adopt the same plan to rid the combs of bees, and succeeded very well, although it is much harder work on account of the combs being so heavy. With our perfect escape-boards of the present time, it is not necessary to thus shake the bees from the combs when extracting, for the bee-escape cleans the combs of bees perfectly, and is the thing to use where all the combs in any upper story to any hive are to be removed.

HOW MANY ENTRANCES TO A BEE-HIVE?

Question.—In making hives, how many entrances should be allowed? I am told that, beside the front or main entrance at the bottom of the hive, an entrance should be made at the rear also for ventilation, to be opened during hot weather, and one near the top of the hive to be open at all times when the bees are storing surplus honey, so they need not have to travel so far to carry honey from the entrance to the top of a second or third story hive. What is your opinion in this matter?

Answer.—Regarding the ventilation matter, I much prefer to make the entrance large enough to give all the needed ventilation in times of extreme heat, and have it so arranged that it can be easily contracted to meet the requirements of the smallest colony when desired. My reasons for preferring are that, unless the rear entrance is closed during cool nights, it makes the hive so cold by the draft of air thus caused, that the bees can not work to advantage at comb-building or evaporating nectar; and, worst of all, the bees get a habit of using this ventilator for an entrance, so that, when it is finally closed, the bees which have been accustomed to use this as an entrance to the hive go out at the regular entrance, but return to the old place only to find it closed, thus causing a great commotion and loss, as they know of no other place of getting into their home, having so marked on their first flight. As to the entrance into or near the surplus apartment, any one arguing that such is a necessity shows a lack of thorough knowledge of

the inside workings of the hive. The bees which gather the honey are not the ones which deposit it in the cells, as I have several times proven by taking away a queen of one variety of bees and introducing a queen of another variety. For instance, I once took away the queen of a black colony in June, and noted the time the last black bee hatched, and when the first Italian bee emerged from its cell. As young bees do not gather honey till they are sixteen days old, when the colony is in a normal condition, on the fifteenth day after the first Italians hatched none were seen going in and out at the entrance but black bees, while an examination of the surplus-apartment, in which bees were briskly at work building comb and depositing honey, showed scarcely a black bee there, but all were Italian. And this is only one instance among many which have proved the same thing. Consequently I am opposed to more than one entrance to any hive.

[I sometimes practice your method; but more often I pick the frame up, grasping the projecting end of one end of the top-bar; and, doubling my fist, I strike the top-bar one sharp quick blow at a point where there are no bees. I find I am more successful when I take the bees by surprise; because, the moment they are jarred once, they will hold to the cells tighter than ever. I am also careful not to smoke them much if any before this shaking-off process; otherwise the bees stick their heads into the cells and take a firm grip.—ED.]



FEEDING BEES SUGAR SYRUP IN THE SPRING.

Allow me to say one word with regard to the management of bees in spring. Some few prominent bee-keepers, with more zeal than wisdom, recommend feeding bees, at this season of the year, large quantities of sugar syrup, so that, when they begin to work on clover, the hives are already full of syrup, and consequently the first, and, in fact, all the clover honey, must go to the surplus-boxes. Now, all this sounds very nice, and possibly some beginners may follow such a course until a little more knowledge on the subject convinces them of the folly of that kind of practice. I will give my reason why not to do so.

When the surplus-boxes are put on to make room for the queen, the bees will usually move a large part of the stores from the brood-chamber to the surplus-apartments, and thus you see you have an adulterated instead of a pure article for the market. But it has been said that a little sugar won't poison anybody. Very true, it will not. But to do so, will poison your conscience; lower yourself in your own estimation, blast your reputation, and injure the honey-producing interests of the country. The people want a pure article, and will buy it and use it liberally, when convinced of its purity. Every business man, or nearly so, to whom you offer honey, will ask you if it is pure. Now, if there is the least taint of sugar about it you must say so or

lie. But if you begin to explain that there may be a little, etc., why, the game is up and you are out, for no respectable dealer will touch it, unless you can vouch for its purity. True, you could make a big report at the close of the honey season; but I am proud to believe that no Canadian bee-keeper would feel very happy over a crooked report, however large, consisting of sugar and honey.

Let us most religiously see to it that Ontario honey shall stand extra No. 1, in the markets of the world. Work hard and make your honey crop as large as possible; but never sacrifice quality for quantity.

Belmont, Ont., May 4.

—S. T. Pettit, in the *American Bee Journal*.

Mr. Boardman, to whom we sent the above extract, replies:

Read carefully on page 345 of GLEANINGS the last part of my article on feeding before the honey season. I believe it is true, and so accepted by all fair-minded bee-keepers—that stores once sealed over in the hive will not be again unsealed during the season unless some extra inducement is brought to bear upon the bees to make them do it. We all know how frequently the extractor has been recommended for this purpose when the queen has been restricted for room. Reversible hives and reversible frames are to induce the bees to unseal and remove their stores. So well established is this fact that I consider it a waste of time to discuss the matter.

H. R. BOARDMAN.

East Townsend, O., June 6.

CELLULOID TABLETS FOR NUMBERING HIVES.

Mr. Root:—I inclose a little piece of celluloid, with the request that you investigate the practicability of using such material for numbering hives. It can be had in any color. White, of course, with black numbers, would be the best for hives. It seems to me it would be a very desirable material for that purpose, as it would not be injured by the sun's rays, nor by moisture. I wish to get numbers for about 100 or 150 hives, and really don't know what to get nor where to get it. To get a painter to paint them on metal would be too expensive; ordinary cardboard might answer, still it would not be very durable. There ought to be quite a sale for such things if they can be furnished at a reasonable price.

G. F. HYDE.

San Diego, Cal., May 26.

[The great trouble with such tablets is, they are too light and expensive. Painted tin ones, as spoken of by Dr. Miller, would be, I think, much better. Dr. Miller, who uses such tablets, and to whom your letter was sent, writes as follows:]

I never thought of the thing before; but I believe Mr. Hyde's suggestion is a good one, to have numbers for hives ready made. One who knows the advantage of it is not likely to have any other plan than to have the number stay always with the stand, the number on the hive changing whenever it changes from one stand

to another. I don't know of any better way than to have tags with numbers on them, so they can easily be changed from one hive to another. But I don't think celluloid is the thing. It is, I think, more expensive than tin, and not so durable. I spoiled some for Emma last winter by having it too near the stove, and I'm afraid the heat of the sun would sometimes be equally great. I think it would pay Mr. Hyde to have some tin tags painted, but I think you can get them up in quantity for less money, and accommodate a good many.

Marengo, Ill.

C. C. MILLER.

[We can certainly make the numbered tin or zinc tags—numbering black and tags white, if desired. Perhaps another year we shall list them.—Ed.]

CONDITIONS FAVORABLE FOR SWARMING.

From the 3d to the 10th of June I had 14 swarms from 100 hives of bees. From the 11th to the 29th inclusive I had 7 more swarms. During the first period the bees gathered some honey; but during the second period they gathered it much faster. During the first period the days were hot; but during the second there were many hot days also. But—and here comes a difference—during the first period, not only were the days hot but the nights were unusually warm for any time of the year; while during the second period the nights were noticeably chilly. So my conclusion would be that hot nights with hot days, during a honey-flow, tend to produce what is called the swarming-fever; while cool nights—other conditions being the same—tend to discourage it. This in connection with your second editorial, page 488.

JOHN S. CALLBREATH.

Rock Rift, N. Y., July 1.

[Very likely you are correct. We had those conditions during the time referred to in the editorial.—Ed.]

THE CLOVERS VALUABLE TO BEE-KEEPERS, WHEN SOWN FOR BEE-PASTURAGE.

Mr. Root:—Will you please give a short article on crimson and alsike clover? I should like to know when to sow them, and also their value as bee-plants.

D. P. REAVIS.

Francisco, Ind., May 30.

[Alsike, medium red clover, and all the clovers commonly used in farming, are usually sown on grain in the spring. This whole matter is so well known that we need not take space for it here. Crimson clover is something new; and it has been clearly proven in many localities, even as far north as we are here in Ohio, that it may be sown, say at about the time corn is cultivated for the last time, in the corn, and will then take root, and come up and get sufficiently established to withstand the winter, blossoming some time in May, a little before white clover or any other clover comes out, if I am correct. During the coming fall this matter will be tested sufficiently to settle the question as to just how much crimson clover will do in furnishing feed, bee pasturage, or clover to plow under.—Ed.]

THE PROPER WEIGHT FOR BICYCLES; GEAR, TIRES, ETC.

Friend Root:—There are two questions I want to ask you that I am anxious to know. 1. What is the weight of the wheel that you use in your trips about the country? 2. What is the gear of your wheel, and what gear would you advise for all kinds of roads? Mrs. T., as well as myself, is an enthusiastic wheeler as well as bee-keeper, and we are no "spring chickens" either. Another thing, why doesn't somebody write a little book, to sell for about a dime, on the care of the wheel—how to repair it, adjust it, and fix the different makes of tires, etc.? In my opinion, A. I. Root would be the man. Had I had such a book at first it would have saved us a great deal of annoyance as well as some money. M. F. TATMAN.

Rossville, Kan., July 3.

[If a person is an experienced rider—that is, has had at least one season's experience in riding, so that he feels measurably at home—a 22-lb. road wheel is about right. If he is a learner, a 25, 27, or 30 lb. wheel—perhaps the last weight—would be better for him. It is usually best for the beginner to purchase a second-hand wheel weighing about 30 lbs.; and these he can get very cheaply now, because the more experienced riders are now all crazy for the light ones. A. I. Root is now riding an 18-lb. Rambler, 1 $\frac{1}{2}$ racing tires, and geared to 68 inches. He weighs about 125 lbs., normally, but this wheel seems to be a little too light for him; for he has broken out several times some of the fine cobweb spokes, and has buckled his frame a little. The latter has not hurt its riding qualities, and the spokes have been replaced at slight expense. As a general thing, however, I think it would be better for the average experienced wheelman to ride something a little heavier—about 22 lbs. seems to be now about the accepted weight; and, if indications are correct, riding weights will not run much under this next year. The 22-lb. is what I am riding myself—a Monarch, which I prefer to a Rambler. I have not had the least trouble with it, and often carry my boy on the handle-bar in what is called a "Kozy" child's seat. Our combined weight is about 180 lbs.; and yet as I ride carefully ten or eleven miles an hour I have no fears but that my bicycle is amply strong. My machine, as well as my father's, is geared to 68 inches. This is none too high for a light-weight wheel such as 20 and 22 lbs. When wheels weighed 40 or 45 lbs., 56 and even 60 gear was high enough.

I see there is a good deal of effort made now to get a changeable gear—one that may, by a "flip of the fingers" at the saddle or handle-bars, be changed to a high or low gear. Possibly I may be mistaken, but I would not give a cent for any of them. With my 68 and 70 gears that I have tried, I think I have climbed all the hills that I ever did on my lower gears. Early last year I rode a Victor with 63 gear, climbed all the hills with it, and later in the season I put on 70 gear and rode up the same hills. The point is right here: With the higher gears the rider has more time to push the pedal down. With lower gears he has to keep chasing the pedal. Under such circumstances, especially in high speeds, it is not possible to exert the full amount of power on the pedal. Both theoretically and practically, then, I prefer a gear not lower than 68. But I would add a proviso that the wheel should not weigh more

than 30 lbs. I have not tried a 76 or 80 gear, but I should not be surprised if I should find comfort in using them also, because there is less kicking in the air, no chasing of pedals, but a slow, easy, graceful motion, instead of a wabbling, quick-kicking, pedal-chasing, so characteristic of the lower gears.

Although you do not ask it, perhaps a word in regard to tires may not come amiss. I prefer a single-tube semi-roadster—that is, without removable inner tube. They hold air better, and it is now possible to repair them. A couple of years ago we did not know how; but now that that question is solved, single-tube tires, in my estimation, are far preferable.

As to size of tire, while I once, with all the rest, thought 1 $\frac{1}{2}$ and 2 inches were the most comfortable for the road, the 1 $\frac{1}{2}$ semi-roadsters that I ride are just as comfortable; and instead of weighing 6 or 7 lbs. per pair, they register only 3 lbs. A. I. R. is riding a 1 $\frac{1}{2}$ double tube; and while he is not particular whether it be single or double, he says 1 $\frac{1}{2}$ is plenty large for him.

You suggest the wisdom of writing a little book; but so rapid has been the change in the subject of cycling, such a book would be out of date in six months; and so we must turn to the manufacturer's catalogs, and to the special journals that are issued. *The Bicycling World*, published at Boston, Mass., is one of the very best. The price is \$1.00 a year, weekly.

There, you can see that bicycling is one of my hobbies. It is almost impossible for me to stop here. But I remember that I am talking to bee-keepers mainly and wheelmen secondarily, and so I will stop right here.—Ed.]



W. D., Ky.—To get rid of the small ants, find their nest if possible. Make a hole through the center of the nest with a crowbar, and pour in about half an ounce of bisulphide of carbon, which you can get at your drugstore. Quickly cover the hole, and it will destroy the nest, ants and all, but it will not kill vegetation. If you can not find the nest, put a little molasses on a board, poisoned with strychnine, or some other poison. Put this in a place where only the ants themselves can get at the sweet. This will kill them as they make their visits; but, of course, the better way is to get at their nests.

G. L. V., Mass.—The subject of artificial incubation of queen-cells is very old. Under the heading of "Lamp Nursery," in the old editions of our A B C book, away back in 1878 and '9, there are full particulars on this subject; but there are very few queen-breeders, if any, who now use artificial heat for hatching cells. What are known as hatchers—a series of queen-cages put down between the frames, or on top of them, over a powerful colony—is preferred. These little cages contain a single cell; and the heat arising from the cluster is sufficient to hatch them. Of course, the natural heat of the colony is far superior, more regular, and better in every way, than any thing that can be supplied by artificial means.



DR. MILLER's slang—just see how he goes for the editor, in Straws! and then observe how he sins himself in the same way, in the next few Straws!

PERHAPS it is a little early, but not very much honey, even from basswood, is being reported. We have had a fairly good flow, and hope others have fared as well as we.

YOU will see by Straws that Dr. Miller thinks the hive discussion should be continued as long as it brings out valuable facts as it now seems to be doing. I really do not wish to continue the subject if there is not a call for it, and simply ask. Do others feel about it as Dr. Miller does? GLEANINGS is yours, and ready, I hope, to dish up for you whatever you like best, providing it is good and wholesome.

SHALL the Bee-keepers' Union be consolidated with the North American? is a question that is now and should be thoroughly discussed preparatory to the next meeting of the latter at Toronto. It is being advocated by the *American Bee Journal* and the *Bee-keepers' Review*. So far as I can at present see, GLEANINGS is also in favor of the scheme. Bro. York thinks it would give us a membership of 500 or 1000, and a fund from both treasuries of \$800; and then, as he pertinently remarks, "we could petition Congress or State legislatures, in such a way that they would hear and—grant." You are quite right, Bro. York. Of course, the consolidation would not affect the workings of the Union.

WE have printed some 52,000 copies of the A B C book heretofore, without a scrap of advertising. In the present edition, or the one about to be launched forth, we propose to break over our rule and allow a certain amount of select advertising from queen-breeders, supply-dealers, honey-merchants, and, in fact, anybody reliable, desiring space at the end of the book. The A B C goes to a very desirable class of customers—beginners—who would see the advertising cards on its pages when they might not see them elsewhere. The space will be charged for at the same rate as for one insertion in GLEANINGS. Copy must be sent in before August 1, when the forms will be closed. The next edition comprises 10,000 copies. A few copies have been sent out to supply pressing and immediate orders.

BEE-PARALYSIS INHERITED FROM THE QUEEN;
DUTY OF QUEEN-BREEDERS, AGAIN.

A CORRESPONDENT writes that he purchased a queen last year of a queen-breeder, and that

the bees of this queen subsequently developed bee-paralysis. In the mean time he had raised nine queens from this mother, and the bees of all these nine queens showed the same disease. This, I firmly believe, is only one of many cases, and goes to show that the disease is inherited from the queen. How careful, then, all queen-breeders should be that bee-paralysis is entirely exterminated from their yards! Some of the friends thought that my calling for a "show of hands" of all queen-breeders who would destroy every case of paralysis in their yards, as soon as discovered, was a measure both extreme and unnecessary. It may be in the case of those who do not sell queens; but it certainly is not for the breeder.

THE HOME OF THE HONEY-BEES ENLARGED AGAIN.

ONCE more the Home of the Honey-bees is to receive a substantial enlargement in order to enable it to turn out more goods. Another story is being added to our wood-working building, and new machinery is being put in, so we hope to nearly double our present capacity for turning out hives and sections. We have already ordered another large engine, which all told will give us a total horsepower of about 200. New and larger exhaust dust-fans and dust-separators have been found necessary in order to keep pace with the unprecedented demand for our new polished and sanded sections. Later on we will show you how we look with the recent additions.

DEATH OF A PROMINENT SUPPLY-MAN.

I REGRET to chronicle the death of Chas. E. Parks, which took place at his home in Watertown, Wis., on the morning of July 1. He was a member of the firm of the G. B. Lewis Co., of that place. He was intelligent, progressive, and, with his other accomplishments of push and business sagacity, an inventor. He was, I believe, the largest stockholder in the company, and the man who invented the machinery now in use by that firm, for making sections, and also for what is known as the Parks basket-crate—a sort of shipping-basket or box that is used largely for a great variety of purposes. It was he also who demonstrated, if I am correct, the possibility of making the present one-piece sections in quantities. Although not the original inventor, he brought the section before the public. Mr. Parks was personally known to the writer, who has had several pleasant talks with him at conventions and elsewhere. When I last saw him he looked the very picture of health and strength; and it was a great surprise to me when I learned a few months ago that he was lying dangerously ill in Florida—notice of which I gave at the time in these pages. He leaves a wife (daughter of G. B. Lewis) and three children.

The affairs of the G. B. Lewis Co. will be con-

tinued as formerly, and will be managed, probably, by G. B. Lewis and his sons.

CRIMSON CLOVER AS A HONEY-PLANT.

WE clip the following from a recent issue of the *Farm and Fireside*:

Crimson clover, sown the middle of August on the writer's experiment plot, commenced blooming the first of May and ripened its seed early in June. For four weeks the honey-bees hummed joyously over its beautiful blossoms. Wherever it can be grown, crimson clover is a honey-plant of great value. It is the first of all the clovers to bloom. Where the bee-keeper has white clover or alsike clover, he can add one month, at least, to the length of the honey harvest by a field of crimson clover.

I could not make out from the paper either date or locality; but the paper is published at Springfield, O.

NUMBER-TAGS FOR HIVES.

IN another column Dr. Miller inquires regarding the cost of tin tags, numbered, to put on hives. In our last issue this form of tag seemed perhaps the most feasible; but since that time I have called to mind how queen-nursery cards, of which we used to sell a good many (a card of ordinary cardboard manilla, having certain printed matter on its face), have stood the test of year after year of weather; and I have been wondering if a tag-board manilla would not be far better—or at least as good, and far cheaper. We know that paint does not stick readily to tin. In four or five years it will either rub or flake off, and the tin will turn to a dead, rusty brown, leaving the figures in black in poor and indistinct contrast. Manilla tags, something like what are used on express packages, when neatly tacked upon the hive, and printed with a bold-faced type, with common printers' ink, will stand the weather, and outlast the painted tin tags. It is possible that it might be advisable to treat such tags, after being printed, to a solution of oil, but I hardly think it necessary. Well, such tags can be gotten up for one-fourth or even a fifth of what ordinary tin tags would cost; they would last as long, or longer, and could be easily duplicated, when necessary, at a slight cost.

GLEANINGS UNPREJUDICED.

IF there is any one thing that the editor of *GLEANINGS* is trying to do, especially since, as publishers, we are interested in a large supply business, it is to select fairly, impartially, and honestly, matter that shall give an unprejudiced view of bee-keeping. It is easy and natural for a trade-journal to be prejudiced toward its own business; and while, perhaps, we may possibly have been *unconsciously* guilty in this respect, we strive earnestly to give every side a fair hearing. The whole bee-keeping world seems to have settled down, in the United States at least, on the idea that the

Langstroth hive is about right; but here come along some very prominent, influential, and expert bee-keepers, giving some solid arguments in favor of a deeper or cubical hive. It is with pleasure that I give you the benefit of their opinions in this issue. Should these opinions prevail, and carry that bee-keeping world with them, it would make a howl among supply-dealers. While we might "howl" with the rest, we propose to let the truth come out.

Again, I have tried to, and propose to let the advocates of the double brood-chamber give their honest opinions concerning the merit of that form of hive. And, still again, I propose to let the ten and twelve frame folks advocate their ideas. While I do not think it would be wise to continue this discussion indefinitely, enough has been said to call out more, and to lead us nearer to the goal that we are all seeking—the kind and shape of hive that will give us the most honey or money with a minimum of labor.

FOUL-BROOD INFECTION FROM COMBS; AN AGGRAVATING CASE.

A PROMINENT bee-keeper, whose name I do not mention for fear he would not desire to have the facts made public, writes that one of his out-yards is badly affected with foul brood. It seems he purchased some combs of a party who lived at some distance. These combs were shipped in open hive-bodies, with only slats nailed over the top. They arrived at the station on Saturday night, and unfortunately the out-yard in question of our friend was within a short distance of the freight-house. Of course, it was not bee-proof, and a window was broken out. Our friend being entirely ignorant of their arrival, the bees on Sunday had a regular "pow-wow" over those combs, because they were dripping with honey; and the agent, arriving, threw the freight-house doors wide open to "let the bees out." Of course, this made matters ten times worse. He sent notice to the owner of the out-yard, but it seems he did not receive it—or, at least, not until the next Monday morning, when all the mischief had been done. At that time he repaired hastily to the scene, examined the combs, and found them to be badly affected with foul brood. Well, in just three weeks' time the disease manifested itself in various quarters of the apiary, just as we should expect it to do. Our friend managed to keep it down somewhat by cutting out diseased cells as fast as they appeared, as he did not wish to resort to the heroic treatment of destroying all combs, brood and all, until after the harvest. This procedure, it seems, kept the disease under control, but it kept breaking out elsewhere. His plan is now to put all the diseased colonies in an isolated location, and prune the diseased brood out, or destroy entirely the combs badly affected.

The combs which were shipped in open hive-bodies in the first place, and which gave rise to foul brood in an apiary that was perfectly healthy previously, should at least have been examined before being shipped. I will assume that the party who sent them was ignorant of the presence of foul brood in them; but, ignorant or not, it seems to me he should be prosecuted to the full extent of the law, to teach him a lesson; at all events, I think it would be wise for any one who buys combs to examine them carefully before using them. If they come from an apiary whose owner is slipshod in his methods I would not take them at any price, especially if foul brood had been in the vicinity, or was likely to be. It seems that the party who shipped the combs to our bee-keeping friend in the first place was warned to be very careful. In view of that warning, the fullest penalty of the law is none too good for him.

The bee-keeper having just acquired the disease in his out-apiary asks what we think of his methods of procedure—cutting out diseased spots in the combs; of entirely destroying such as were badly affected; and finally of isolating all cases so treated, in a location by themselves. The plan is all right; but to be on the safe side I would see that all such honey, and, in fact, any of the honey coming from that yard, even though the colonies from which it was taken appear to be perfectly healthy, be boiled, or at least be kept at a temperature of 180 degrees for two or three hours. We always want, for safety's sake, to assume that the honey that has been extracted from colonies in the vicinity of foul brood may contain the germs of the disease. If it is put on sale at the market there is quite a liability that bees in the vicinity will get a few sips at it, and then away goes the contagion in a new locality.

With regard to cutting out diseased spots from the combs containing here and there a little infection, this may be all right as a temporary expedient; but I have rather the impression, from reports received, that the disease is quite liable to reappear in such colonies. I see no reason why it should not. To make a sure thing of it, I think putting the bees into clean hives, or one that has been thoroughly boiled, on frames of foundation, and compelling them to draw some of the foundation out before feeding, is the only real safe way. If there are only two or three colonies in the yard so affected, they should be all so treated; but when the disease gets such a fearful headway, and honey is coming in, perhaps the temporary expedient of cutting out the diseased spots would do during the honey-flow; and after that time I would certainly extract all the honey after the brood-rearing had ceased, or largely so; give them frames of foundation, and feed the honey back; or, better yet, after it has been boiled; or, better yet, clean syrup. I am not

satisfied that medicating it with any sort of drug is an advantage or may be.

THE FIVE-BANDED BEES.

DEDICATED TO DR. MILLER

By J. H. Markley.

(Air:—Branigan's Pup.)

Old Mr. Doolittle had some fine bees,
A cross from the very best strains;
For seventeen years he had bred them with care,
And spared neither money nor pains.
They had the least bit of a stump for a sting,
And yet had a very long tongue;
Large bodies, strong legs, and very large wings,
They went to the field very young.

Chorus after each verse:

Buzz-a-buzz-buzz what wonderful bees!
For beauty they surely would please,
There never was known such workers before,
As Doolittle's five-banded bees.

They worked on red clover with perfect success;
Were busy from morning till night;
They made lots of surplus when other bees
starved;
Their debut was hailed with delight.
Their queens were prolific—remarkably so—
Laid eggs with wonderful haste;
For beauty no other queens could excel—
Wore five bands of gold round their waist.

Chorus:

They found their way to the Home of the Bees,
To show that they were just the thing;
When Ernest got after them with a sharp stick—
He said, "The five-banders will sting."
He said that, as workers, they didn't excel;
Their "gold plate" was not worth a pin,
They winter-killed worse than the "leather-
backed" strains;
Now, wasn't that truly a sin.

Chorus:

Bee-keepers turned over to Ernest one day,
And each of some point would complain;
And thus did the people with wonderful thud
Sit down on the five-banded strain.
Some said they were lazy; some said they were
cross,
And some e'en their beauty decried,
They died off in winter, they dwindled in spring,
And thus the poor five-banders died!

Chorus:—

Carbondale, Kan.

[I am sorry I can't rhyme in my answer to you; but my "sharp stick," I think, never got after Doolittle's five-banders. His strains (and I saw them in his own yard) were not cross. They appeared to be good breeders; and that they were good workers I had no reason to doubt. I did not criticise Doolittle's strain or that of any one else who bred them carefully from *purely Italian stock*; but the *tendency* of some who turn their sole attention to *color*. A strictly five-banded colony is rare, and hard to get, even if we eliminate all other desirable qualities out of account; and in order to fill orders according to color and marking, every thing else was apt to be lost sight of. The mere fact that reports from all quarters showed that the craze for color was giving us bees cross and short-lived (that is, poor winterers), shows that there was good ground for my protest. I do not object to color if we do not sacrifice other qualities that go to make up the bread-and-butter side of bee-keeping.—ED.]

OUR HOMES.

Know ye not that ye are the temple of God, and that the Spirit of God dwelleth in you?—I. COR. 3:16.

Saturday morning, June 29, news reached me that a near and dear relative was very low with malarial typhoid fever. As her home was not over forty miles away I started off on my wheel. When a little more than half way there I stopped with another relative, a brother of the sick one; and in talking the matter over in regard to these fevers that are so apt to occur at this season of the year, my attention was turned to a matter of vital importance to the homes of our people—the water we drink. Let me go back a little.

Forty years ago our nearest neighbor in the town of Mogadore, Summit Co., O., lost a child by typhoid fever. My mother went over and helped to take care of the child. Shortly after its death she was taken down and had a long siege; in fact, she just escaped with her life. Before she recovered, a sister, very near my own age, was also stricken down; but the physicians, with great care and labor, managed to prevent the malady from going any further. It was then nearly springtime. The first case of the fever started in July or August, and it ran in that neighborhood for more than half a year after. Well, my uncle told me there was typhoid fever in that neighborhood now; and the Mogadore physician said they had typhoid malarial fevers in that locality almost every year. A year or two ago he became convinced that the water they drank from a certain spring was at the bottom of the trouble; and he gave strict orders that no water should be used for drinking—purposes from that particular spring. Some friends came from a distance to take care of one of the patients; but the doctor told them the same—they must not drink any water from that spring. Well, all of the family and all of the neighborhood obeyed the doctor's commands except one young woman who laughed at his caution, and said she would drink all the spring water she pleased. She alone was stricken down with typhoid fever. Those who heeded the doctor's orders escaped. This spring is right close to what was my boyhood home. I have drank from it hundreds of times, and know all about it. It is at the foot of a hill on the edge of a mucky swamp. The water boils up from the sandy bottom. If you dip out a painful, however, before the spring is full again, surface water from the mucky swamp may run in, as well as spring water from the bottom. Not more than two rods from the spring there used to be an old stable; a little further away, a slaughter-house. Is it any thing strange that, when the spring should be dipped dry, may be several times a day—say on washing-day—that the surface-water from that nasty swamp should mix in with the pure water? And, by the way, typhoid malarial fevers almost always begin to appear when the wells are pretty nearly dry. The State of Michigan made some extensive experiments along this line some years ago, and gave us some carefully prepared statistics that seemed to indicate very plainly that low water in wells must have some connection with the prevalence of fevers in the locality. Well, after we had talked this matter over, and each one present had furnished more or less facts—facts all pointing in one direction—I began to ask questions in regard to the drinking-water, etc., where our relative was now prostrated with fever. I was told they had an excellent well of water; but, like many other wells at this season of the year, the water was very low. Furthermore, in building

an addition to their home a year or two ago, they built directly over the cistern; and the sleeping-room had been located in this new addition, almost *directly* over the cistern. I at once questioned about the state of the water in the cistern. Being covered up so closely it smelled very bad; and our sick relative had said, just before she was taken sick, that she was going to have that cistern cleaned out and filled up, and a new one made out in the open air. I stepped on my wheel, and in a little more than an hour I was at the bedside of my friend and relative. While attending school in early life my home had been with this aunt; and a strong friendship had always existed between us, especially after I decided to make her God my God, and her people my people.

I found the doctor with many of my relatives consulting as to what could be done for the loved one. Their old family physician was absent on a visit, and a young doctor was called in from a neighboring town. I told him I wanted to meddle a little. When I explained that it was about the cistern and the drinking-water, he said I was exactly the man he wanted to find. The case had puzzled him ever since he took it up. In the early stages my aunt was delirious. She would get up in the night, before they knew she was very sick, and she was once found on the floor, in a faint. Unless constantly watched she would get up, and insist that she was not sick at all, and that the watchers and doctor could go home. He said he felt sure there was a reason for the peculiar symptoms of both members of the household. Some of the cistern water was pumped. None of it had been used for drinking—purposes, but it was too bad to wash even one's hands and face with. Furthermore, this cistern had at different times overflowed and got into an unused cellar; and this unused cellar was shut up close. Now, their well, where all their drinking-water came from, was not *twenty feet away*, in a porous, sandy, and gravelly soil, from this closed-up cistern and cellar. The patient was calling often for a drink of cold water right from the well. My uncle urged that there could be nothing the matter with the well water, because it was so beautiful to look at, and so pure to taste. When I told him the germs of fever might exist when neither taste nor smell nor *looks* would indicate it, he became greatly surprised. The doctor backed me up most vehemently, and said something as follows:

"Dear friends, the latest developments in the way of typhoid fever indicate most clearly that it is not contagious unless one drinks the water the sick ones have been in the habit of drinking."

Somebody suggested that there might be danger in using it for cooking.

"No, my friends," continued the doctor, "providing the water used for cooking be boiled, it seems to be perfectly safe. And rather than run any risk, if you have any reason to suspect the drinking-water, it should be boiled before using it. We are making great progress in this very matter of the cause of fevers, and the whole evidence seems just now to point, to an astonishing degree, toward the fact that the water we drink—especially the cold water right from the wells or cisterns, is the main cause of these terrible fevers."

Now, friends, it did me a lot of good to have a good talk with that bright young doctor. He was full of life and energy, and full of love for humanity; and he assured me that one of the great obstacles in the way of getting rid of these malarial fevers was to get people to have faith in the doctor, and to believe he *knows* his own business.

So much for looking out for the bodily comfort and safety of my sick relative. At the time of my visit she had regained consciousness, and the doctor said the symptoms had changed unexpectedly for the better. She knew me, and expressed much pleasure in seeing her "boy" once more, for I used to be "her boy" in my schooldays. She expressed some surprise to see so many relatives coming, and, stranger still, because she was not, as she said, very sick. As it was evidently a task for her to hold on to any thread of thought for any length of time, I talked with her briefly at intervals. I very soon found out that death had no terrors for her, for her hope was in Him who has passed *through* death, that he might lead us and take us safely through the dark valley to the immortal shore beyond. I sang to her a verse of that old hymn—

How sweet the name of Jesus sounds
In a believer's ear!
It soothes his sorrows, heals his wounds,
And drives away his fear.

Then I talked to her about the helplessness of doctors and friends, but of the mighty power of the great Father who has promised to be with us in times like that. Fearing that she was becoming wearied I made some haste to bid her good-by, promising to pray for her. Before I had mounted my wheel again, *another* sister came to tell me what my aunt had said after I had gone out. It was something like this:

"Were you here when we had that sweet little meeting?"

When the listener assented, she replied:
"Oh, it did me so much good!"

I felt almost sorry I had not talked with her longer; but the doctor said, and I too felt sure, that her recovery depended greatly upon quiet and rest. He said he feared a return of her delirium; and any little excitement, especially any undue exertion of the brain, might prove fatal. Now, the particular point in this talk to-day, dear friends, is this: The season of the year is upon us when we may expect fevers. The condition of the rainfall where most of you live is such that your wells may be low. For the sake of your dear ones, for humanity's sake, and I think I may say for Christ's sake, do be careful, and look to it in regard to your drinking-water. If I am correct, people many times suffer greatly from the effects of bad drinking-water, even if they do not come down with a fever. The tired and overworked mother, the weary hands from the harvest-field, and, in fact, any and all of the inmates of our homes, may have headaches, a feverish feeling, exhaustion, and nervousness, to contend with that they need not have at all were these matters duly attended to. For a long time I have disliked the taste of the water from our cistern, even though we have a slate roof, and the best cistern we know how to make, with a filter for the water to run through. A few weeks ago we pulled out the chain pump and wooden tubing. This old wooden tubing was water-soaked and partly rotten; and just as soon as it was out of the way, that objectionable taste disappeared. We now have a water-drawer that takes air clear to the bottom of the cistern every time the pump is worked. If you have any reason to fear the water is not just right, and that you can not get water from any other source conveniently, boil the water before any of you drink a drop of it. I have not space here at this time to speak about the water furnished to the cows that give the milk; but I will just add that, in a neighboring county, a number of cases of diphtheria were traced almost unmistakably to the visits of the milkman; and our health officers are now demanding that he who sells milk shall furnish just as

good water for his cows to drink as he would furnish for his own family.

I felt as if it would be best for me to make my stay a brief one, and so I took my wheel again. May be the work I had done made me feel happy; and perhaps being free from care, and riding through a beautiful part of the country, also made me feel happy. And, by the way, it seems to me I never before saw so many pretty gardens as I passed that afternoon through Summit and Portage Counties. The gravelly hills especially seemed to be recognized and appropriated. Fruit and berries were plentiful everywhere. Why, in one place I saw potato-tops higher than the picket fence, and in the month of June too, and after that terrible frost just back in the month of May. Now, lest you accuse me of telling great yarns right here in one of my spiritual talks I will explain that the gravelly hillside where those potatoes grew had been cut into along the road, so the picket fence was on lower ground than where the potatoes grew. Yes, and people were digging new potatoes almost if not quite the size of hens' eggs. When I asked if it were possible that they grew after the frost, I was told they hoed the dirt over the tops and covered them up till the blizzard passed by. This was some trouble, but it gave them new potatoes of their own growing when they were retailing at 40 cts. a peck at the corner grocery. Why, it paid, and paid big, for all the time and trouble. But I must remember my gardening talks come in another department. For some reason, as I was telling you, a wonderful thrill of peace and happiness and joy came into my heart during my ride about sundown from Randolph to Springfield. The road was sandy, and made the wheeling difficult; yet by going along the foot-paths that had been trodden by the bare-footed children I made very good speed. In one of these foot-paths that ran up over the bank quite a little higher than the road, my pedal struck the hard ground at the side of the path, and I went over down the bank almost as suddenly and unexpectedly as if somebody had hit me with a club. I was a little bruised, it is true, and my clothes were somewhat soiled; but almost before the bruised spots had got done hurting I burst out into expressions of thanksgiving and praise that I had been hurt no worse, and that it was my privilege to live in such a beautiful world, and to visit so many pleasant and happy homes. Yes, and may be I could help a little to make them pleasanter and happier still—who knows?

As my home was nearly 30 miles away, and it was between sunset and dark, I decided to pass the Sabbath *away* from home.

□ Next morning at the usual time I was sitting in the same old Methodist church where I used to attend Sunday-school just 45 years before. The superintendent was absent, and the minister was away, so they called on me to give them a little talk at the close of the exercises. I told the children who I was, and pointed out to them the seat where I used to sit when I was only ten years old. Then I told them of one particular Sabbath when I repeated *forty* verses from the Testament, and how one of my classmates cried because the teacher told him there was not time for him to say his *eighty* verses. You see, they had just started a new plan. For every ten verses we got a blue ticket; for every ten blue tickets we had a reward-ticket; and for every ten reward-tickets we were to have a little book. I think the little book I got for committing to memory 1000 verses is somewhere in the family now. I told that little Sunday-school I would not repeat *all* of those forty verses then and there that I committed to memory 45 years before; but I

said I would give them two or three verses that I verily believe had lodged in my memory away back in earlier years, and have held their place there ever since. In fact, I do not know but they are framed and hung in that little picture-gallery I told you about in our last issue; and, oh what nice little verses they are to be engraven on the tablet of the heart—especially little hearts!

But I say unto you which hear, Love your enemies; do good to them that hate you; bless them that curse you, and pray for them which despitefully use you.

After Sunday-school was out we drove around past that spring that had been the cause of so many cases of typhoid fever. It was walled up, and there did not seem to be any outlet to it—at least, not a very complete one. And this suggests an important matter. A spring or well, to be wholesome, should have some method of letting the water run away in a continuous stream, or of removing the water daily. The stream down by Champion Brook runs a steady stream except during a very severe drouth. Just as soon as it stops flowing over the top of the iron pipe which surrounds it, the water becomes stagnant, and unfit for drinking. Last season, when the boys told me they could not drink the water, I made an opening in the iron pipe, a foot lower down. Then it began to flow as before, and the water was cool and nice. Of course, we can not have a running stream from a well; but most wells furnish very much better water if there is a constant removal of the water. Sometimes watering the horses or other farm stock will very much improve the drinking-water of a well, especially where the water comes out of a rock. But the greatest care should be taken to prevent surface-water from seeping in during a dry time. Large-sized sewer-pipe set down into the rock, the joints made water-tight by cement, is perhaps the nicest arrangement that can be made; but I believe that, taking the wells as we find them, water from a good cistern, with slate roof on the buildings, is very much safer as a preventive of fevers.

In the afternoon I attended a funeral. The deceased was a prominent man in the vicinity, and I met great numbers of my old friends—many of them whom I had not seen for between forty and fifty years. Now, I do not know that I ever enjoy attending a funeral; but I did feel very happy at that funeral that Sunday afternoon. Although the house was crowded, I found a place near an open window where I could hear distinctly every word uttered by the gray-headed clergyman. Most of the friends of my boyhood had grown gray-headed during the lapse of time, and many wrinkles furrowed the faces of those who were boys and girls in my schooldays; but, notwithstanding, they were good-looking still, for they were for the most part progressive, intelligent people. Now, friends, if we live right, if we take care of these bodies right, we may be happy on Sunday, and we may be happy week days. We may be happy when we are old and gray and wrinkled; yes, we may be happy and joyous, even when we attend a funeral. By the way, I want to speak of the hymns that were sung. It seems to me I never heard any grander sacred music than we had there. There was one deep bass voice that had a depth of volume, and softness and flexibility (if our musical friends will not criticise my expressions), that stirred wonderfully the emotional part of my nature. I asked somebody, after the service was over, who it was.

"Why, that was Captain Clemmer."

"John Clemmer?"

"Yes," was the reply, "John Clemmer."

"Why," said I, "he was a celebrated singer fifty years ago."

And it is true. When he was twenty he came to move the hearts of men; and at seventy he had this wonderful gift still; a may God grant that he is still using this gift as a power to bring men out of despondency and darkness into the bright light of faith and hope in Christ Jesus.



IRRIGATING FORTY ACRES OF CELERY.

Next morning, after the events narrated above, I was up and dressed and on my wheel at 15 minutes past 3. May be some of you do not know that it is light enough to see, the first day of July, at such an early hour; but so I found it. I begged permission of my relatives to get up in this way without disturbing any of them. My ride was along near Springfield Lake, in Summit Co. The valleys between those great gravelly hills were so full of fog that they also looked like lakes. At just 5 o'clock I rode into the beautiful city of Akron. It was not quite breakfast time, to be sure; but I was quite ready for breakfast. I asked the night policeman if he could tell me where to find a lunch at that early hour. He said at first it was somewhat of a question; then he suddenly remarked: "Oh, yes! there is a man and his wife over there who are *always* up and ready for business. I feel pretty sure they will fix you out nicely." In a minute more, with the aid of my wheel over the vitrified-brick pavement, I stood before a little building called a temperance-restaurant. The man was up, and said I could have some breakfast in five or ten minutes. His face looked familiar to me; and when I told him who I was, it turned out to be one whom I met years ago in our county jail. He was in trouble; and, together with the other spiritual advice I gave him, was—what do you think, dear reader? Why, I told him the shortest way out of his troubles—in short, the "straight and narrow path" to get out and keep out—was to *get married*. He knelt with me on the cold stone floor of the jail, and promised to lead a better life; and he finally, it seems, took my advice and got married; and he and his wife had been for years doing a good business right on that crossing close by the electric cars and steam-cars. They gave me a breakfast in short meter, that was fit for a king—or, rather, I *thought* it was, and that, you know, amounts to the same thing.

It is a little funny that, when I got on my wheel, I was happy again; yes, a new streak of happiness seemed to have got into my wheel; and there is not any nicer road for wheeling, that I know of in the world, than that from South Akron to Copley.

I reached friend Atwood's celery-farm before he was up—or, at least, he was not out of his place of business. I found a boy firing up a traction engine. This engine was belted to a rotary steam-pump. The pump was large enough to throw a stream of water four inches in diameter. The inlet-pipe is five inches, and the outlet four. This rotary pump lifts the water perhaps five feet. He has utilized a creek that runs perhaps a quarter of a mile north of his forty acres of celery. The water comes to the pump through a twelve-inch sewer-pipe. Then by cementing the joints very securely he sends the water through five-inch

runner-pipes all over his forty acres. The four-inch stream pours out on, say, half an acre at a time. When this half-acre is thoroughly soaked he puts it on the next one, and so on. Whenever the ground gets dry enough the calculations are kept going, and the whole thing is working like a charm. His five-inch sewer-pipes, good quality of seconds, cost him only a cent and a half a foot. He manages to dispense with expensive valves by plugging the openings with a wooden plug held in place by bolts on a T-shaped yoke. In fact, our friend Atwood has, at comparatively small expense, worked out and got into actual practice the best irrigating-plant I ever saw anywhere.

Now a little advice to those who are thinking about irrigating. A windmill may answer for small areas—say a quarter or half an acre; but for a whole acre you will want a big windmill and a big tank for storage. But you want lots of water to do the work right. During a severe drouth, such as we had in May, sprinkling water on top of mucky ground is apt to do harm rather than good; and even letting water on through an inch hose is slow work, and answers for only a small area; but with a stream coming out of a four-inch pipe you can flood the ground, and make it soak in clear to the roots of the plants. The forty acres of muck land I have mentioned has a very little slope, so that, by taking water on at the highest point, it can be made to run over the whole surface. I should have said, looking at the ground at the time I was there, it was almost too wet. Friend Atwood says it is the way celery wants to be kept to do its level best. As one approaches the grounds and gets a glimpse of it from the hill, it looks almost like an enchanted land instead of a reality. The straight rows,* running away off in the distance, look like slender threads of gold, especially where the Golden Self-blanching is planted. Then the White Plume would make silver threads, contrasting beautifully with the other; and the Giant Pascal with its deep dark green, and larger, and of more robust growth, comes in again to delight the eye and please the lover of high-pressure gardening. Friend Atwood has been constantly increasing his acreage ever since he started, and his celery has always gone off at good prices; and, if I am correct, the supply has never been equal to the demand, especially during the winter months. At present they have found the safest method of wintering to be the open air. With their great quantities of muck that can easily be kept dry for facility in handling during the winter months; *i. e.*, it is kept dry by letting the water off through the drain-tiles—they get a complete protection from frost, and are never troubled with rot. This land, I presume, would not have brought \$5.00 an acre a few years ago; but now I doubt whether it could be bought for \$200 an acre.

FOURTH OF JULY. AND HIGH-PRESSURE GARDENING AND FARMING.

You may inquire what these have to do with

*To secure rows so absolutely straight as they do on celery-farms, a small rope—say something like a clothes-line, or larger if you choose—is stretched from one end of the field to the other. Then a roller, heavy enough to make the ground smooth and solid, is run over the rope, and the plants are set in the print this rope makes in the ground. The hard rolled surface also makes a nice place to walk on while you are setting the plants. After the plants are set, flooding them with water makes a sure thing of an even stand. I believe that sometimes, when the weather is exceedingly hot, the plants are shaded by one-foot boards held up by a piece of drain tile at each end of the board and one in the middle. As these boards are used afterward for bleaching the celery, they are always near by, ready for use.

each other. Well, only this: I have for six months past been trying to get time to visit friend Terry, my cousin Wilbur Fenn, and some of the other progressive men in that direction; and when it was decided that we should stop all work on the Fourth, and "shut up shop," letting every one celebrate and enjoy himself after his own fashion, I decided to take mine with a wheel-ride; and I commenced celebrating about 3 o'clock on the afternoon of the 3d. You know I always take a new route where I can do so conveniently, so as to see more "homes" and meet with more adventures. So this time I got lost as usual, and did not find myself until I was unexpectedly in sight of friend Crawford's. Even though it was nearly sundown I stopped to take a look at his berries. I wished especially to see if the runnerless strawberry on friend Crawford's grounds was an ever-bearer, as mentioned on page 497. Sure enough, it had some berries on, but they were not as small as raspberries, after all, and the plants did not come from friend Goldsborough, but from a man by the name of Niman, in Texas. It had put out blossoms, and ripened fruit of fair size and good flavor since my previous visit. Their potato onions had, in consequence of the dry weather, ripened up and matured a small crop almost before July came in. The white-top onions were also going to be a failure, or pretty nearly so, so far as getting top sets of any size was concerned.

I reached friend Terry's just as it was getting dusk. His automatic watering-device I found close by the roadside, and there it was doing duty, sure enough. The water (regulated by a float) always stands just so high in the trough, no matter how many cattle go there to drink; and not a drop of water is wasted during this dry time. The water comes from a spring on higher ground, four or five rods away. His potatoes this year are the New Queen, Irish Daisy, and the Freeman, with a few other sorts for testing. The Freeman, although an early potato, is making a much better show than any of the others. I could not see a trace of blight; the stand was very perfect and even. The leaves were thrifty, and of a bright green. Although his clover was the best I had seen in either Medina, Summit, or Portage Counties, it was having a rather tough time of it.

The succession of dry seasons we have been having is doing much to encourage opening up the low mucky grounds throughout Ohio, and some important facts are coming to light. In the potato-field adjoining Terry's, a valuable fact shows clear out in the road to the passers-by. Half of the field was planted with potatoes raised on upland, and kept hard and firm by being buried on Terry's plan until the time of planting. The other half of the field was planted with potatoes not as good, grown on muck land. The muck seed gave ever so much the best stand, and the potatoes are now away ahead of the others. I believe it is generally considered that potatoes grown on low muck ground are not as good for table use; but I think I have heard before that they were just as good to plant, or even better. It is often claimed that potatoes for seed raised on some other farm or some other ground are better than those raised on the same piece of ground.

I found Walter Atwood (brother to the one who has the celery-farm) cultivating his garden. A row of tomatoes containing green fruit almost full size attracted my attention. "Surely these haven't grown to this stage since the frost?" He replied that they were carried safely through the frost by being covered with a double thickness of burlap. Where only a single thickness was used, the plants were more or less injured. Well, half the row showed

beautiful, smooth, handsome tomatoes. They were grown from a paper of Burpee's Matchless. The other half were crooked, twisted, ungainly things, hardly worth taking as a gift, even when ripe. These latter were grown from a paper of seed furnished by the United States seed department. Of course, they were a free gift; but on a single row of tomatoes it cost my relative a dollar or more for taking a paper of seeds as a gift instead of buying them from a responsible seedsman. The government seed-shop had labeled them Lorrilland; but they were certainly nothing like the Lorrilland, but the poorest and most worthless strain I think I ever saw in my life.

I found my cousin Wilbur Fenn with the ground all fitted, ready to plant about nine acres of potatoes. These were to be put in the 5th of July. When I inquired what condition his seed was in he took me to the cellar and showed me over 100 bushels of Monroe Seedlings, scarcely sprouted at all, and almost as hard and firm as when they were first put in. It was a surprise to me, as it was the 4th of July, and after the most severe hot dry weather we have had in any season, to find potatoes in such excellent order as this. Well, it is somewhat owing to his good cellar for the purpose, and somewhat owing to the fact that the potatoes are regularly shoveled over about once in two or three weeks. He has learned the trade of keeping potatoes in good order, and he does it every time. This is a part of his system of getting good crops from potatoes planted in July. Yes, and we must not forget that the late-grown potatoes are the only ones that could be kept hard and firm, like these. The cellar is pretty well down in a gravelly loam. Then the earth is banked up all around, clear up to the woodwork of the building. The windows are tight, and covered with carpeting, so as to exclude light, and also to exclude the summer heat from the outside. In fact, it was so cold down there on the 4th of July that it almost made me shiver. His neighbors and others keep saying, "Well, you hit it this time, but some time you will be caught out by an early frost—see if you don't." Well, he has been caught repeatedly by early frosts and freezes; but he gets his potatoes into that cellar, by some hook or crook, notwithstanding; and such late-grown potatoes are worth more in the spring, for table use, planting, or any thing else. All things considered, he finds the Monroe Seedling the best for his special system of any. Of course, he has other potatoes planted earlier; and we looked over a whole potato-field of Freemans, Six Weeks, Craig Seedling; and last, and probably looking best of all, Monroe Seedlings that were pretty nearly a foot high.

Then we adjourned to the berry-patch. I think I never saw so many nice raspberries on, say, a quarter of an acre of ground before in my life. They are the Hillborn. But his gravelly loam is specially adapted to small fruits, and almost all other kinds of fruit generally. In going to the house we passed the strawberries. He went over to Matthew Crawford's after he had pretty well sold out of plants. But friend C. said he could give him some good plants of the Barton, Beverly, and Beder Wood. All are imperfect except the latter. I made quite a fuss over the raspberries; but I uttered more exclamations of delight over that strawberry-patch on the 4th of July. The whole family had used all they wanted, and there happened to be more beautiful large berries, dead ripe, than even "Uncle Amos" could manage. Now, I do not know whether it was the varieties mentioned; that beautiful, gravelly loam where there had been a garden

for a good many years, or whether it was cousin Fenn's special treatment; and especially I can not understand why he should have great *perfect* strawberries so late in the season when everywhere else they are dried up and gone. I have noticed that friend Crawford gives the Beverly a big recommend; and perhaps the excellent varieties have something to do with it.

By the way, I must not forget to mention that, while I was at friend Terry's, I was treated to a generous dish of his inimitable Sterlings, and on the 4th of July too. You know I once decided to drop the Sterling; but that beautiful rich tart taste, when once tried never to be forgotten, made me decide that the one row of Sterlings that still remains on our grounds shall be kept there after all, as so many people prefer the Sterling for a late canning berry, and one that will stand the frost as well as or better than any thing else. On the way to the house a group of five bright interesting children claimed my attention.

"Now, Uncle Amos, you must come and see our garden before you go home."

Sure enough, there was the children's garden. It was not much larger than a dinner-table—perhaps the size of two dinner-tables. It contained two monstrous hills of potatoes. Of course, Wilbur Fenn's children would have potatoes in *their* garden. Then there was one row of peas ready to pick, and a sprinkling here and there of other vegetables. And then I told them about Huber's garden. He promised his Sunday-school teacher to plant five cents' worth of seeds, and give the crop to mission work. He was going to take a five-cent packet of radish seed; but I suggested he should go to our seed-woman and get an ounce for the five cents, as he did not have to pay any postage. After planting his bed full (the bed being about as large as a good big dinner-table) he had some seed left which I told him he might take back. He took back three cents' worth, and paid *two* for what he planted. In about 30 days he sold 29 bunches at 3 cts. per bunch, making 87 cts.; but it was on one of our highly fertilized plant-beds. With another five cents he bought half a dozen tomato-plants. They are trained up on the most approved plan, taught by our Ohio Experiment Station, and they are now loaded with green fruit. That reminds me that we put our first picking of tomatoes on the wagon to-day, July 8. They were from the Fordhook Early, planted in a deep bed so they could be covered with sashes during the May frosts. They are now trained on poultry-netting, and stand perhaps four feet high.

At Willis Fenn's (another cousin) I found him spending the Fourth getting his ground ready for seed corn. Hay is worth from \$20 to \$25 a ton, and it behooves a progressive farmer to save every bit of it if possible. His plan of "cultivating" potatoes just before they come up pleased me so much that I want to describe it here. He uses the same clod-crusher described in the Potato Book, page 181. See cut below.



It is simply six 4x4 hard-wood scantling, 8 feet long, put together with bolts, with the corners down. This is drawn over the field so as to mash lumps, level the ground, and scrape the very daylight out of every thing in the shape of weeds just starting. It leaves the gravelly loam almost as level as a brickyard; and when the potatoes come through they look remarkably pretty, and the ground is in just the right shape for the Breed weeder a little later.

In cultivating potatoes or any other crop during a dry time like the present, I believe it is considered on all hands that level culture gives the best results. Stirring the soil has a tendency to make the surface dry out faster, it is true; but notwithstanding this, a soft mellow surface resists drouth infinitely better than a hard solid crust; so we must stir the soil. But if, after having stirred the soil, you leave it in ridges or furrows—even small furrows—such as our 12 or 14 tooth cultivators leave—the drying-out process goes on more rapidly than if these little furrows were all brushed down level and smooth; and in order to do this, friend Terry has a strip of board fastened to the back end of his cultivators, the corners of the board rounded off, and the lower edge slightly rounding, so that the ground which is a little lower in the middle of the furrow curves slightly upward toward the top of the hills. This treatment, both in theory and practice, leaves the soil in the best condition to resist drouth, and to take advantage of the first shower. As soon as you have rain enough to leave a crust over the surface, the harrower with the board follower should go over it again.

I found Richard Fenn (*still* another cousin) harrowing his potatoes with an ordinary square-toothed harrow, the teeth being straight down instead of slanting. I asked him if that was not rather rough treatment for the little potato-plants; but he told me to look at them after he had gone over, and see how much they were injured. I had to give up that he was doing a splendid job of cultivating, with little or no injury to the potatoes. His field had been gone over with the clod-crusher, shown above, just before the potatoes were up.

Further on I visited Mr. Metlin. He married a bright black-eyed cousin, who used to be a playmate of my childhood. I tell you, friends, it is awful nice to have a good lot of cousins, especially on the Fourth of July. These people had gone away; but the old black-cherry trees where I used to help myself to their fruit, 45 years ago, were still furnishing their luscious treasures. A big broad ladder stood right in front of the door, reaching into the top of one of the great old trees. Before I took my wheel again I pinned a paper on the door, which read: "Cousin Amos called, and in your absence helped himself to the cherries. He extends many thanks." Then I paid a brief visit to my aunt Julia, who is now 91 years of age, and the only remaining one on earth of my father's family of eleven boys and girls.

When my wheel and I reached my own home, our people were just gathering around a Fourth-of-July supper on the lawn. And thus ended my Fourth.



FLORIDA TRAVELS.

The home of Irving Keck, of Bowling Green, was my next stopping-place. Friend K. selected his present location after quite a little examination over different portions of Florida. One thing that attracted him to Bowling Green was the beautiful soft water; and his good wife has hit it exactly in calling it "snow water." It is so clear and soft that it reminds one of melting snow in winter time when you want a nice drink of pure water. Another thing that took hold of him was the sight of real corn-

cribs filled with real corn. Perhaps there are few other places in Florida where farming is carried on to such an extent as to require a corn-crib; but before friend Keck got down to raising crops of corn he brought in tools for farming such as they use in Illinois and Iowa; and he tells me that, when he first started to plow with two horses, the neighbors came for miles around to see the new-fangled farming-tool. But it was not long before they caught on, and he sold several plows. But before one of his neighbors could make it work he had to go over and start up and get the thing going. The corn raised is, however, different from our corn here in the North; and it is put in the crib with the husk on, the husk protecting it from the weevil, which are very bad in that warm climate. The locality seems to be a pretty fair one for bee culture; but friend K. has so many other industries on hand—fruit-growing, gardening, general farming, a small mill for grinding corn, with an engine to run it, etc., that he does not give the bees very much attention of late.

Charles Stevenson, of Bowling Green, purchased a queen and one pound of bees of us in the month of June; and from this start, and nothing else, he increased to seven colonies, besides the original, in one season, and produced 112 lbs. of comb honey. The next season he secured 350 lbs. of comb honey from five colonies; and this product from a single queen and a pound of bees in June is perhaps the largest on record. A sad fact stares me in the face right here. When friend Stevenson got that first pound of bees and queen he was full of enthusiasm and energy and love for the wonderful new industry. Is it not a little sad to think that a mere novice, almost without experience, should sometimes produce larger results in the outset than he does when he gets to be a veteran in the business? Now, Dr. Miller must not feel hurt because of what I have said, and imagine that I have nobody in mind but himself. It is not so, doctor; but just now my impression is that some bee-keepers right around Bowling Green would complain that theirs is not a good locality.

Most of our readers have at different times experimented with a little vegetable called chufa, or earth-almond. Well, these are raised in immense quantities in Florida, for pigs. The pigs harvest the crop, and leave the ground in splendid condition for any future crop. I think these little nuts (for they taste like nuts) are fully as good as if not better than peanuts, and they can be grown with very little care or labor in almost any locality. I believe they have a permanent value on the market, but I have forgotten what it is.

A great many experiments are being made in the way of permanent pasture in Florida; but the weather is altogether too warm for most of the clovers and forage crops of the North. The cassava root is very valuable, both for food and for stock; but it can not be kept any way but in the ground. It must be dug almost as it is fed out. This is the plant that furnishes the tapioca of commerce; and it is such a simple matter to separate the tapioca from the root itself that each housewife can prepare it herself. The residue of the root, after taking out the starchy portion, makes most excellent puddings—at least, it does under Mrs. Keck's manipulation. The plant is propagated by cuttings, or, in fact, by chopping up the stalks at almost any stage of growth, if I am correct.

There is very much difference in the quality of the soil in Florida. If you want good land, select that with a heavy growth of pine-trees—large trees, and close together. Where the trees are few, and far apart, and small and

spindling at that, the land is not of much value—at least, for farming crops. At different places in Florida you find little patches of sand, of greater or less extent, where it seems that almost absolutely nothing will grow. These are called "sand soaks," or "chokes." There are some of them on friend Keck's land, and he has tried in vain to get any thing to grow on these spots, unless it is the wild cherry. This flourishes where nothing else will grow at all. Friend Keck has a queer theory about orange-trees. He says twelve good orange-trees on an acre of ground will bear more fruit than any larger number, after they once get established. If these twelve trees were equal in size to some of the trees I saw, it might be true.

Most of our older readers will remember the articles we used to get from Mrs. Mahala B. Chaddock. Well, one of her queer speeches was, that she wanted to go down to Florida and wrap tissue paper around oranges, and drive a mule team. Through the kindness of friend Keck it was my pleasure to ride after a "mule team" several days. In fact, he took me from Bowling Green to Avon Park and back, a distance of twenty miles, or rather more, considering the roundabout way we went. Our first call was on the National Peace River Phosphate Co. The phosphate is secured by a process called in California "hydraulic mining." The surface soil is removed until they reach the strata containing the phosphate nodules. These are granules, the size of shot up to that of a hickorynut—perhaps the most of them the size of a pea or bean. By means of a steam-pump, water is thrown with great pressure into the bank, or sides of the soil, crushing and crumbling down the sand and phosphate grains together. Then the same engine that carries the pump sucks or draws up the mud and water. This is elevated sufficiently so it can pass through a series of revolving cylinders, letting the mud, dirt, and sand run off into a pond or lake, while the valuable phosphate is saved. After the sediment settles in the lake, the water is used over and over again. The valuable phosphate is then loaded on to cars, and carried to the mill, where it is more thoroughly washed, and then dried and shipped where wanted, to different parts of the world. Later on I passed shiploads of this phosphate going to foreign countries. The composition is similar to that of bone or bone meal; and it contains so large a percentage of phosphorus that it is now to some extent separated and used for making matches. Its origin is largely a matter of speculation; but it seems likely that it comes from decaying bones and animal matter of fish and various reptiles, which have accumulated or washed up into beds.* In process of time the phosphate grows or accumulates in these nodules. It is a little strange that this exceedingly valuable product of Florida is used but very little by Florida farmers and gardeners, because it does not happen to be the chemical element needed for their soils. A little talk with the managers of the phosphate plant very soon convinced me that there was no imaginary value placed on the product. In fact, they know what they are doing, almost as well as does the miner of gold or silver. The output is sold according to the per cent of

phosphate it contains; and this is determined by accurate chemical assay. The managers are as much at home in the science of chemistry as bee-keepers are in discussing queens and hives; and it brought vividly to mind my researches in chemistry during my early years, while I discussed the matter with them. One of the men on the steamboat told me the phosphate industry of Florida amounted to 27 millions of dollars a year; but from some government reports that I have gone over hastily since my return home, I am inclined to think that somewhere about half that sum, or less, would be nearer right.



STRAWBERRY-PLANTS.

It is altogether too dry here in Medina to fill orders for strawberry-plants, unless it is very small orders, with plants taken from our beds kept wet by our sub-irrigation.

WANTED—FIGWORT SEED.

If you haven't got any, can't you gather some for us? We will pay you \$2.00 for a pound of fresh new seed; and now is the time to gather it if it is growing on your premises.

WANTED.

Samples of the new vineless sweet potato. As there has been a good deal of inquiry in regard to this, I wish some of the friends would mail me some samples, to try their cooking qualities; also tell us how low you can ship them by the barrel.

SCARLET GLOBE TURNIP SEED.

We have something over 100 lbs. of this seed, raised by one of our bee-keeping friends. We can offer it at the following prices: Ounce, 5 cts.; $\frac{1}{4}$ lb., 10 cts.; 1 lb., 35 cts.; 2 or more lbs., 30 cts. per lb.; 5 lbs. or more, 25 cts. per lb. If wanted by mail, add 10 cts. per lb. for bag and postage. By consulting any of your seed-catalogs you will see the usual price is 50 or 60 cts. per lb., oftener 60.

SWEET CLOVER OR BOKHARA SEED FOR SOWING.

As none has been offered in response to our call in last issue, we are obliged to buy the hulled sweet clover, called Bokhara, of the New York seed-merchants. This is just as good, but it costs more than the ordinary sweet-clover seed furnished by bee-keepers. This is because the latter is usually sold and sown with the hulls on. Now, this is just as good for seed with the hulls on; in fact, some claim that it germinates better; but when you are buying it by the pound you do not get as many seeds as when the hulls are off; therefore the best prices we can make for the present, on hulled clover seed, generally called Bokhara, is 18 cts. per lb.; 5 lbs. at 16 cts.; 10 lbs. or over, at 15 cts. If wanted by mail, add 10 cts. per lb. for bag and postage. We can supply any quantity promptly at the figures given above. As soon as we get some of the new crop with the hulls on the prices will probably be the same as in our catalog.

CRIMSON-CLOVER SEED, HOME-GROWN AND FOREIGN-GROWN.

In answer to several who have asked if the seed we advertise is home-grown we quote from a letter received by one of our New York seed merchants:

"Our crimson-clover seed is all imported stock. There is very little, if any, American-grown seed in market; besides, we are selling and shipping carloads to the producing countries; so, even if you buy direct from Delaware, it is very doubtful whether you get Delaware seeds. We consider the imported seed better and cleaner than the domestic."

By another season, very likely there will be plenty of home-grown. With the excellent reports that come with the crops that have been already produc-

*Quite a quantity of bones are thrown out in the mining operations; but these are either thrown aside, or utilized in some other way. Sharks' teeth are also quite plentiful in phosphate beds. I carried a lot around in my pocket until they cut through the lining, and then I had to give them away. If you were to see one of them, and feel its serrated edges, you would not wonder so much how it is that a shark can bite off a man's leg at one snap of its jaws.

ed for the past two or three years, it seems a shame for the United States of America to be obliged to send across the ocean for this seed. And here is a field for bee-keepers to get a crop of honey and a valuable crop of seed, and feed for all kinds of stock, to say nothing about improving the land by having clover to plow under. For prices see last issue.

AMERICAN PEARL ONION-SETS.

The present state of the crop indicates that prices will not be less than 25 cts. a quart, \$1.50 a peck, or \$5.00 a bushel.

White Multiplier onions, 10 cts. per pint; 15 cts. a quart; \$1.00 a peck; \$3.50 a bushel.

Winter or Egyptian onion-sets, quart, 5 cts.; peck, 35 cts.; bushel, \$1.00. If wanted by mail, add 10 cts. per quart extra for postage and packing. All of the above will be ready to ship when this reaches you.

We have described the above three varieties of onions so frequently that we shall not go over it again here, except to say that all of them may be planted out now. For fuller particulars, see our seed and plant catalog, mailed free on application.

OTHER THINGS THAT MAY BE PLANTED THE MIDDLE OF JULY.

Kidney wax beans will give a crop for table use before frost; and with usual good luck a crop of seed also; the same with the Best of All green-podded wax beans. Either kind, qt., 20c; peck, \$1.25.

Beets for table use do nicely put out now; also early cabbages if you have the plants. Carrots and parsnips, as well as mangels, will produce half-sized roots, which are considered better, by many, for stock. Put them in rather thick.

Now is just the time to put out celery, if you can get the plants; but at present we are short of all kinds.

Corey's Extra Early and Ford's Early corn will also give roasting-ears, probably. All kinds of sweet corn can be put in now for corn-fodder. Until our sweet corn is sold out we will make a special price of 50 cts. a peck, or \$1.50 a bushel.

Cucumbers for pickles will probably escape the frost. Ounce, 5 cts.; lb., 50 cts.

Now is the time to start Grand Rapids lettuce for fall use. Put it in beds with boards a foot high around the outside; give it plenty of water, and keep it covered with cotton sheeting when the sun is hot.

You can sow almost any kind of onion seed for sets; but if the fall should be very wet you would have bunch onions instead of sets.

If you want to raise your own seed peas, now is the time to plant them. While the crop will not be as large as spring planting you will get seed free from bugs—at least, that has been our experience; and we have never had them fail to make good peas for table use, when sown in July.

We have some Premium Gems that have come up beautifully within the past week, and there has not been a bit of rain on them since they were planted. We make a special low price on the Premium Gems of 75 cts. a peck, if ordered now.

If you have some extra-early potatoes that are already sprouted, or that you can induce to sprout right away, they will make a crop before frost.

All kinds of radishes will do nicely now if you have the right kind of soil for them. We are getting magnificent ones from our muck grounds right along, without a bit of rain. The Chinese Rose winter is one of the prettiest winter radishes for fall planting.

Salsify, or vegetable oyster, will be large enough for nice table roots if planted now; and we can give you fresh seed, of our own growing, for 10 cts. an ounce, or \$1.00 per lb.

This is also just the time for spinach during this month and next. It is also just the season for all sorts of quick-growing turnips. We consider the Purple-top White Globe as perhaps the best.

Last, but not least, now is your time to sow buckwheat and crimson clover. Sow both at the same time on the same ground; and if you do not get a crop of one you are pretty sure to get a crop of the other. All seeds by mail, 9 cts. per lb. extra.

FRESH LOT OF IMPORTED QUEENS.

We have just received a fine lot of imported queens direct from Italy. A good many orders have been awaiting their arrival, but we shall have a few more choice queens to spare. Price now is the low-

est at any time of the year. Best imported, that is, the very best select, are now only \$4.50; fair imported, \$3.00.

THE RUNNERLESS STRAWBERRY—MORE ABOUT IT.

Mr. Root:—The runnerless everbearing strawberry you lately mentioned in GLEANINGS was doubtless from a plant I sent friend Crawford for trial last year. The fruit is not much larger than a raspberry, and shuckless. I have never known a plant to send out a runner, because it is their growth habit to make crowns instead of runners. Yesterday I separated the roots of a plant and counted seventy-two crowns, each of which had some roots, or would soon put them out if set in the soil as a cutting. They not only bear continuously from May till frost, but put out again after the first frost last autumn; and I picked a few in December. The fruit is rather soft, and quality fairly good. To those who, like myself, like strawberries in and out of season they are an acquisition. I have not yet sold any berries in our market, and don't know how they will take. They were raised from seed brought over by me in 1891. Everbearing strawberries are common in France. I have now several hundred splendid-looking French and English seedlings.

ARTHUR T. GOLDSBOROUGH.

Wesley Heights, Washington, D. C.

Italian Bees in 10-frame Langstroth hive, at \$4.00.

Tested Italian queen, 75c; two or more, 60c each. Untested, 50c each. Address

OTTO KLEINOW,
No. 122 Military Ave., Detroit, Mich.

Square Glass Honey-Jars.

We have on the way another car load of honey-jars. Four sizes: dimes, half-pounds, pounds, and 2-pound jars. Jars and packing is first-class, and safe arrival is guaranteed in every instance.

Bro. Root seems to discriminate against the Muth jars. Our friends are therefore advised to compare prices in Muth's and Root's catalogs before ordering. We mail these catalogs together.

CHAS. F. MUTH & SON,

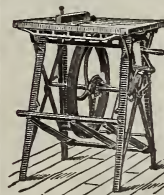
976 & 978 Central Ave., Cincinnati, Ohio.

Please mention this paper

I Prevent Swarming

by de-queening, and sell or discard all of my queens every year. I now offer again all of my tested queens for 65 cts. each, 2 for \$1.25. Many of them are worth three times the money. A few mismated queens at 30 cts. each.

T. H. KLOER, Terre Haute, Ind.



Read what J. I. PARENT, of CHARLTON, N. Y., says—"We cut with one of your Combined Machines last winter 50 chaff hives with 7-inch cap, 100 honey-racks, 500 broad frames, 2,000 honey-boxes, and a great deal of other work. This winter we have doubled the amount of bee-hives, etc., to make, and we expect to do it all with this saw. It will do all you say it will."

Catalogue and Price List free. Address W. F. & JOHN BARNES, 545 Ruby St., Rockford, Ill.

When more convenient, orders for Barnes' Foot-Power Machinery may be sent to

THE A. I. ROOT CO.

Please mention this paper.

ALL PRAISE THEM. ITALIAN QUEENS


From the apiary of
W. H. Laws, Lavaca, Ark., can't

 **BEAT for BEAUTY and BUSINESS.**

The leading bee-keepers of the U. S. are my customers. Your choice—either Golden or Leather-colored.

Prices Reduced.—Fine breeders always on hand, \$2 to \$3; untested, 75c; 3 for \$2; tested, \$1; 6 for \$5.

W. H. LAWS, Lavaca, Ark.

 In responding to this advertisement mention GLEANINGS



We can fill Your Orders


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
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
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